NETWORK WORLD
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IBM boosts central site LAN control

By Paul Desmond
Senior Editor

WHITE PLAINS, N.Y. — IBM last week announced software designed to ease management of distributed token-ring LANs from a central NetView console.

IBM's new Local Area Network Automation Option (LANAO)/MVS makes it easier for a NetView operator to detect LAN problems, issue commands to correct them and track resolution. The capabilities are supported from the same console operators use to manage other Systems Network Architecture components.

"You could theoretically have your entire enterprise — MVS systems messages, application status, network status — all on one screen," said Pat Donleycott, IBM's product manager for NetView solutions.

The new host-based software acts on alerts that travel up to NetView from IBM's LAN Manager, an OS/2-based software product used to manage hardware-related problems. It will also support IBM's LAN Network Manager, an enhanced version of LAN Manager, when it ships next spring.

LANAO/MVS has to be used with NetView and IBM's Automat-

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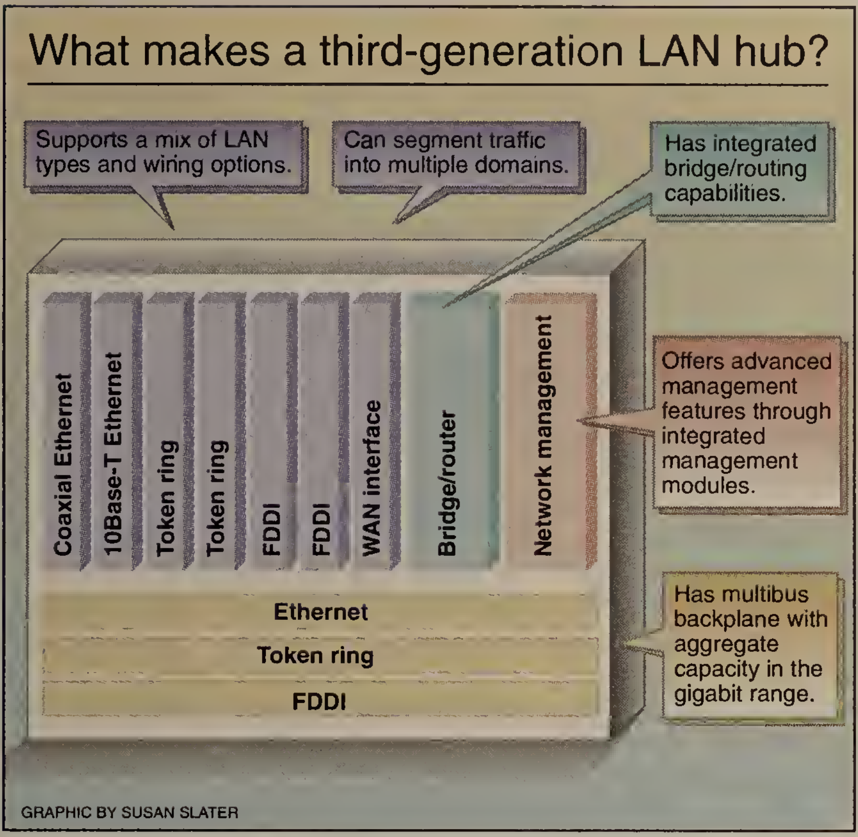
What makes a third-generation LAN hub?
Supports a mix of LAN types and wiring options.
Can segment traffic into multiple domains.
Has integrated bridge/routing capabilities.
Coaxial Ethernet
10Base-T Ethernet
Token ring
Token ring
FDDI
FDDI
WAN interface
Bridge/router
Network management
Offers advanced management features through integrated management modules.
Ethernet
Token ring
FDDI
Has multibus backplane with aggregate capacity in the gigabit range.

GRAPHIC BY SUSAN SLATER

Next generation of local net hubs adds flexibility

By Bob Brown and Maureen Molloy
Network World Staff

The emergence of a powerful new class of intelligent wiring concentrators, classified as third-generation hubs, promises significant performance, reliability and net management improvements over earlier models.

Although opinions vary about what constitutes a third-generation hub, the devices generally have multiple high-speed buses, support different types of local-area networks as well as media and multiple domains, come with integrated bridging and routing capabilities, and offer advanced network management.

"With third-generation hubs, vendors have begun offering users LANs in a box," said Todd Dagres, director of data communications research at The Yankee Group, a market research firm in Boston.

LAN hubs have come a long way since the first models hit the

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Cable & Wireless to air int'l frame relay

Sets aggressive global rollout plans for service that leverages the carrier's foreign connections.

By Barton Crockett and Bob Wallace
Network World Staff

LONDON — Cable & Wireless PLC last week outlined plans for a frame relay service, based on Northern Telecom, Inc. packet switches, that will be rolled out on three continents in the first quarter of 1992.

Based on its planned deployment schedule, Cable & Wireless will have the broadest global reach of any frame relay provider, with 17 nodes in Europe, four in the U.K. and one in Hong Kong. Service will be available April 1.

"We didn't want to be a me-too provider," said Bill Rahe, Cable & Wireless Communications, Inc.'s private-line and data services marketing director. "We decided to go with our strength, which is international."

Cable & Wireless owns major stakes in 36 carriers that will support the service abroad, including Cable & Wireless Communications, Inc. in the U.S., Mercury Communications, Ltd. in the U.K. and Hong Kong Telecom.

"No one has planned as wide a reach as Cable & Wireless," said Christopher Finn, an associate with TeleChoice, Inc., a Montclair, N.J., consultancy. "This will differentiate their service."

Like AT&T and Infonet Services Corp., Cable & Wireless will offer access to its frame relay net at 56K and 64K bit/sec and up to T-1 speed, increasing in 64K bit/sec increments.

The carrier will be the first to offer E-1-speed access, which is

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NEWSPAPER

FEATURE

DEC crafts three-towered vision of open systems

By Eric Smalley
Special to Network World

DECnet Phase V is dead. Long live Advantage-Networks!

That's what Digital Equipment Corp. proclaimed last June when it announced a fundamental shift in its networking strategy and changed the marketing term used to describe its evolving DECnet architecture from DECnet Phase V to Advantage-Networks.

The strategy espoused under Advantage-Networks is considerably different from the one DEC had preached since 1987, when DECnet Phase V was introduced.

In particular, the new approach backs away from the company's promise to shift completely from DEC proprietary network protocols to a pure Open Systems Interconnection implementation under the DECnet Phase V name.

Instead, DEC set in stone a policy it began to develop last year that gives equal weight to its existing and proprietary DECnet Phase IV architecture, the de facto standard Transmis-

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Users lament state of DEC, Apple deal

By Jim Duffy
Senior Editor

Even as Digital Equipment Corp. and Apple Computer, Inc. prepare to disclose new joint efforts, users and analysts are claiming the 4-year-old partnership has stalled due to differences in corporate philosophy and shifting priorities that are underscored by recent alliances with other major vendors.

DEC and Apple are said to be readying enhanced network software and plans for DEC to resell Macintoshes worldwide. But that does not impress critics who say the companies have failed to leverage each other's strengths and the products that flowed from the

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McCaw Cellular and Oracle team up to test data service

Wireless point-to-multipoint offering would enable users to distribute data to sites across the U.S.

By Bob Brown
Senior Editor

McCaw Cellular, Inc. and Oracle Corp. last week unveiled plans to develop and test a high-speed data broadcast service designed to distribute information to office-based and portable computers, as well as servers and other network devices.

The point-to-multipoint distribution service would use McCaw's cellular network facilities for data delivery and Oracle's database technology to store and manage the data. The service is intended to be a cost-effective way to transmit information such as stock quotes, facsimiles, news, electronic mail and computer software to multiple recipients at speeds up to T-1.

The companies plan to test the offering in the first quarter of 1992 and, if it proves viable, cut over service in 1993.

The service would compete with offerings from terrestrial and satellite network providers, as well as wireless services from vendors such as ARDIS Co., an IBM and Motorola, Inc. joint venture formed last year to operate a radio data network service.

The McCaw/Oracle offering, as envisioned by company officials, would eliminate the need for users to run terrestrial lines to multiple sites to support these ap-

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Microwave users fight to hold on to radio spectrum

Say FCC decision could put public safety at risk.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Microwave users last week made a last-ditch effort to persuade the FCC not to reallocate spectrum currently used by microwave nets for new personal communications network (PCN) services.

At a special Federal Communications Commission hearing, users representing oil companies, utilities and public safety organizations such as fire and police departments told the commission it would be trading public safety for commercial gain if it hands over their microwave frequencies to PCN providers.

They warned that moving microwave users from their current 1.8-GHz to 2.0-GHz band, as the FCC plans, could compromise critical communications systems used to switch railroad cars, monitor huge gas pipelines, control electricity distribution, and support fire, police and highway patrol services.

Although FCC officials said they are sensitive to microwave users' concerns, FCC Chairman Alfred Sikes, at an informal press briefing last week, listed development of PCN as one of the agency's top five goals for 1992.

PCN is a wireless portable communications technology that allows calls to be placed inside or

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IBM's McGee addresses the issues surrounding APPN

The addition of Advanced Peer-to-Peer Networking (APPN) capabilities to IBM's Systems Network Architecture represents the most radical change to SNA in its history. What once was a strictly hierarchical network architecture is now becoming more peer-oriented and easier to use.

But there's confusion about exactly what APPN will support and how it will be merged into existing SNA nets. To clarify these issues, *Network World* Senior Editor Paul Desmond talked to Rick McGee, manager of communication systems architecture at IBM's Networking Systems group.

In the first of this two-part interview, McGee discusses some immediate APPN issues. In Part 2, he discusses long-term APPN plans, as well as IBM's forthcoming multiprotocol router and the migration toward a high-speed, multiprotocol, multimedia SNA.

APPN has been criticized because it supports only LU 6.2 sessions, while the majority of SNA applications use LU 2. How will LU 2 be supported over APPN nets?

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Briefs

Banyan seeks new executive. Banyan Systems, Inc. Chairman and Chief Executive Officer David Mahoney last week said the company is searching for a new executive to take over day-to-day operations of the local-area network company. Mahoney said the move is being made to allow him to focus on long-range planning and strategy development. Rodger Weismann, executive vice-president, is also expected to shift his primary responsibilities to business development, one aspect of which will include forging new alliances. As of this date, no candidates have been named.

Users applaud X.400 plan. Members of the Internet community last week outlined plans at a meeting hosted by the Corporation for Open Systems International (COS) to support X.400 traffic over the TCP/IP-based Internet.

Bruce Gengler, a network consultant with John Deere & Company, Inc. who attended the meeting, said Merit, Inc., which is the National Science Foundation Network backbone provider, and COS officials outlined plans to provide X.400 over the Internet. Attendees at COS' first Transition Strategy Forum applauded the Internet proposal, since many COS members already use the network. The meeting enabled users and vendors to exchange ideas about migrating from proprietary and Transmission Control Protocol/Internet Protocol nets to Open Systems Interconnection environments.

NEC to resell Proteon router. NEC America, Inc.'s Data and Video Communication Systems Division is expected to break into the local-area network internetworking market today by announcing plans to resell Proteon, Inc.'s high-end Communications Network eXchange 500 bridge/router. NEC will market the bridge/router under the private label XR2000. NEC will also announce a joint technology development agreement with Proteon to develop additional internetworking devices.

Lotus announces layoffs. Lotus Development Corp. last week announced plans to cut its 4,200-member work force by 10% by the end of the first quarter of 1992. The move is part of cost-cutting initiatives to maintain profitability. The Cambridge, Mass., software developer also announced tighter controls over discretionary expenses. The job cuts will affect most of Lotus' business, excluding its Notes and cc:Mail efforts, among others.

Separately, Lotus announced the promotion of June Rokoff to senior vice-president of the Consulting and Information Services Group. She will report to Jim Manzi, Lotus' president and chief executive officer. Rokoff, formerly vice-president of the Communications and Information Services Group, previously had oversight responsibility for Notes and cc:Mail.

GUPTA to upgrade SQLBase. GUPTA Technologies, Inc. later this month is expected to announce Version 5.0 of its relational database server SQLBase, which will add support for a Novell, Inc. NetWare Loadable Module version of the software as well as new Unix support. In addition, GUPTA will possibly offer a Unix version of its SQLBase for Sun Microsystems, Inc. Reduced Instruction Set Computer workstations.

MCI mulls video service. MCI Communications Corp. is considering a plan to launch a public videoconferencing service similar to US Sprint Communications Co.'s Meeting Channel service early next year, a source close to the company said last week. US Sprint's Meeting Channel service consists of public videoconferencing rooms worldwide as well as videoconferencing bridges on US Sprint's premises that companies can use to link participants at various geographic sites into a single videoconference. The source said MCI has not yet committed to offering the service.

Northern Tel to hike Meridian prices. Northern Telecom, Inc. last week said it plans to raise pricing across its Meridian 1 product line by an average of 5%. The Meridian 1 line consists of switch-to-host products as well as Meridian 1 digital private branch exchanges and add-on systems such as voice mail and automatic call distributor software. John Losier, Northern Telecom's private networks marketing vice-president, said the vendor is rasing prices because "the product line is undervalued in the marketplace." Research and development, staff and other support costs also factored into the decision.

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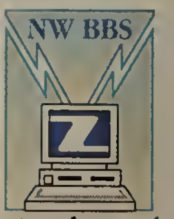

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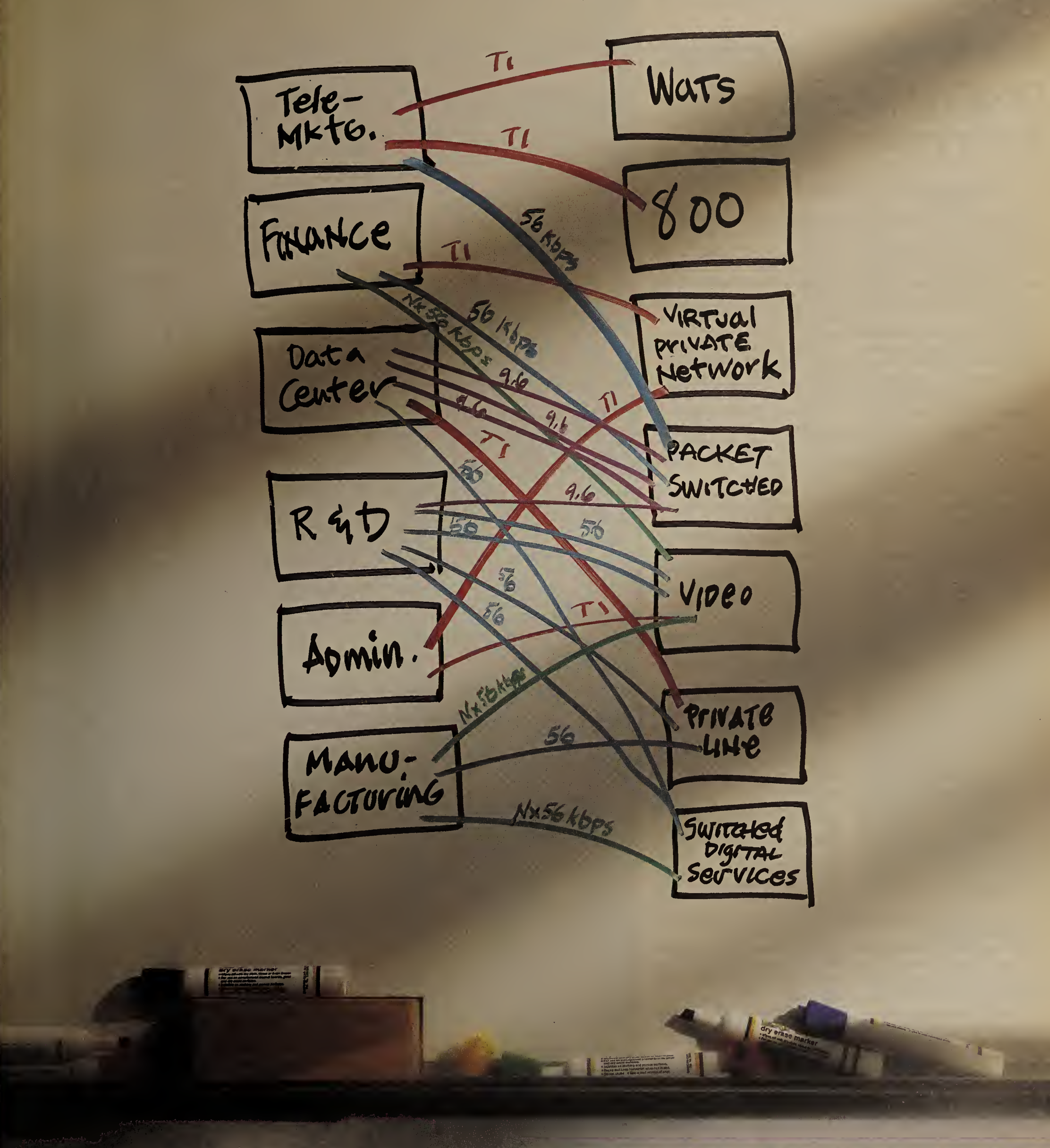

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NCR to use Cisco's code in new router

By Maureen Molloy
Staff Writer

ST. PAUL, Minn. — NCR Corp. and Cisco Systems, Inc. will announce by year end a deal to port Cisco's multiprotocol router software to NCR's System 3000, sources within both companies said last week.

Such a move would mark a major shift in NCR's plans to develop a pure Open Systems Interconnection router to support the company's Open Networking Environment (ONE), which is based on OSI protocols.

This past fall, NCR curtailed development of its Open Networking System (ONS) router because of cost factors and development problems ("NCR shelves plans for key OSI router," *NW*, Oct. 14).

At the time, Bill O'Shea, senior vice-president of NCR's network products group, said the company would explore how to best repackage the ONS technology.

Cisco's software will initially be integrated into NCR's System 3000 line of Unix-based servers and superservers to form the basis for a new router. An NCR source declined to say if NCR will leverage the technology into other System 3000 devices.

"It's a good move on NCR's part," said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C.-based consultancy. "Instead of throwing away something that has a good base to it, they're going to revive it by incorporating Cisco's routing technology."

Not the same ONS

He cautioned, however, that the new product would not emerge as the originally planned ONS router. Instead, it will support multiple protocol stacks, including the Transmission Control Protocol/Internet Protocol and Systems Network Architecture. Also, it is unclear whether the device will initially support OSI protocols.

"It may be a similiar product to ONS, but it won't be the ONS. Instead, they'll bury ONS, rename the product, tweak it and spin it out as something else," Dzubeck said.

The agreement may aid NCR in reviving its initial OSI routing plans as Cisco improves its OSI support.

Adequate router platform?

The router vendor is currently teaming up with Advanced Network & Services, Inc. to develop Integrated Intermediate System to Intermediate System capabilities that will handle OSI protocols.

David Passmore, a partner at Ernst & Young's Network Consulting practice in Vienna Va., said that while NCR may keep its ONE strategy intact by partnering with Cisco, he questioned the viability of the System 3000 server as an adequate hardware platform for a router.

"By using the general-purpose Intel [Corp.] 80486 platform and a Micro Channel Architecture (MCA) bus, NCR will face the same performance issues as IBM, which is also currently building its router on the RS/6000," Passmore said.

Neither platform is ideally suited to be a communications processor, he said. In addition, the MCA bus is not designed for high-speed routing.

"I question whether the [NCR] router could achieve adequate performance relative to other routers that utilize [Reduced Instruction Set Computer] technology and run on dedicated platforms."

Rosemary Cochran, a principal at Vertical Systems Group, a Dedham, Mass.-based consultancy, said NCR's tighter alliance with Cisco indicates that AT&T — NCR's parent company — is fast becoming a more serious player in the local-area network internetworking market.

"It's another signal that AT&T plans to aggressively pursue the internetworking market," Cochran said. "AT&T recently licensed StrataCom [Inc.] equipment to get frame relay to market quicker. By the same token, licensing Cisco's protocol suites will allow them to achieve quicker time to market on the local side, too."

Corrections: The story titled "Appliance maker taking service to cutting edge" (*NW*, Oct. 28) should have identified Online Computer Systems, Inc. of Germantown, Md., as the vendor that provided image retrieval software to Whirlpool Corp.

In the Global Networks Worth Noting box (*NW*, Nov. 25), the number of minutes that the U.S. had in outgoing international calls compared to incoming calls was stated inaccurately. The correct figure is 2.7 billion minutes.

Clarification: An item in Industry Briefs (*NW*, Nov. 18) implied that AT&T Paradyne could be absorbed by another AT&T business unit following a restructuring. AT&T Paradyne, currently a wholly owned subsidiary, could become a business unit of AT&T.

Industry asks for NREN to support commercial needs

CEOs push Bush to broaden goals of program.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — Chief executive officers from a dozen U.S. leading computer companies last week asked the Bush administration to expand the goals of its gigabit network program to support distributed computing and commercial applications.

The CEOs, in a meeting last week with Richard Darman, the White House budget director, said the president's High-Performance Computing and Communications initiative for next year, which launches the National Education and Research Network (NREN), puts too much emphasis on developing technology useful for research laboratories rather than businesses.

President Bush unveiled his proposal for funding research and development in massively parallel computing architectures and gigabit networking last February, when the 1992 budget proposal was first submitted. A similar plan is outlined in a bill from Sen. Al Gore (D-Tenn.) that recently gained approval from Congress and now awaits the president's signature.

While applauding Bush's support for high-speed computing, the CEOs said the White House proposal will spend too much money on hardware when software development is really the main challenge. Also, they urged the president to rearrange priorities in his program to make NREN a nationwide commercial and consumer network based on a client/server architecture.

"We're challenging the government to go beyond what they've proposed," said John Sculley, CEO at Apple Computer, Inc.

The CEOs — including those from Apple, AT&T, Data General Corp., Digital Equipment Corp., Hewlett-Packard Co., IBM and Sun Microsystems, Inc. — are members of the Computer Systems Policy Project (CSPP), an organization formed to address key policy issues.

Sculley said the future direction of NREN was important to the computer industry, which hoped to see not only the traditional Internet research community benefit, but also the medical, manufacturing and consumer sectors.

HP CEO John Young called the initiative "well conceived" but labeled its current focus on helping researchers in labs as "esoteric."

Young urged the government to create a complex net of distributed systems allowing access to distributed government and industry databases. In doing so, the government would have to tackle security issues, which are already an Internet problem, he said.

The CSPP would like to see the government establish a defined set of standards for accessing a database across a distributed sys-

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Software AG products build on client/server foundation

By Joanne Cummings
Staff Writer

BOSTON — Software AG of North America, Inc. last week began fleshing out the client/server software strategy it announced in October 1990 with the introduction of key components for its Entire architecture.

The company will provide new SQL capabilities for its Adabas database management system and port Adabas to a variety of computing platforms. Also, it will offer a line of productivity tools designed to work under Microsoft Corp. Windows 3.0 as well as software that gives users access to data across a network.

According to John Logan, vice-president of Aberdeen Group, Inc., a consultancy based here, Software AG understands the need for transparent access to information over an enterprise-wide network.

"Software AG's vision closely matches what users say they're looking for," he said. "If they can deliver [products] within the next year, they've not only made a knockout announcement, they will also be a major force to be reckoned with in the industry."

As part of last week's announcements, Software AG unveiled Entire SQL Server, software that enables Adabas to handle SQL and DB2 data requests. Previously, the DBMS could only accept Adabas calls. Adabas and Entire SQL Server will be available in early 1992 on IBM MVS, Siemens AG BS2000 and Unix computers.

In addition, the company will port Adabas and Entire SQL Server for Digital Equipment Corp. VMS and IBM OS/2 platforms within six months. Entire SQL Server is priced between $7,600 and $85,700.

Software AG is also offering Entire SQL-DB Server, its first relational DBMS. The new offering is based on the DDB/4 relational DBMS from Siemens Nixdorf Informationssysteme AG and can run on Windows 3.0, MS-DOS, OS/2, Unix and VMS machines. Available in early 1992, it will be priced from $1,400 to $124,000.

In addition, Software AG announced it will offer Windows 3.0 versions of its core database access, application development and communications products.

The company is porting its Natural fourth-generation language to Windows. It has already ported Natural to OS/2 workstations and is scheduled to release Natural for Hewlett-Packard Co.'s HP-UX Unix workstations by year end.

With the addition of a Windows version, users will be able to develop and run applications designed to work with its DBMSs on OS/2, Windows and Unix machines without modification. Natural will eventually be ported to the Macintosh, as well.

Key component

A key part of Software AG's client/server strategy is its Entire Open Function Server (OFS) software, which creates a transparent link between client and server DBMS applications. Announced in October of last year, it currently provides access only to Software AG's Adabas and newly announced Entire SQL-DB Server. But the company intends to provide access to all SQL-based DBMSs eventually.

Software AG said OFS will be available for IBM and Siemens AG mainframe platforms in early 1992 and for Unix and VMS platforms in the future. The company declined to provide a more definite time frame.

OFS consists of two basic modules — the Open Service Broker and the Open Communications Network. Open Service Broker accepts data requests written in Software AG's Natural fourth-generation language or third-generation languages such as COBOL or C, then finds the data and forwards the request to the Open Communications Network.

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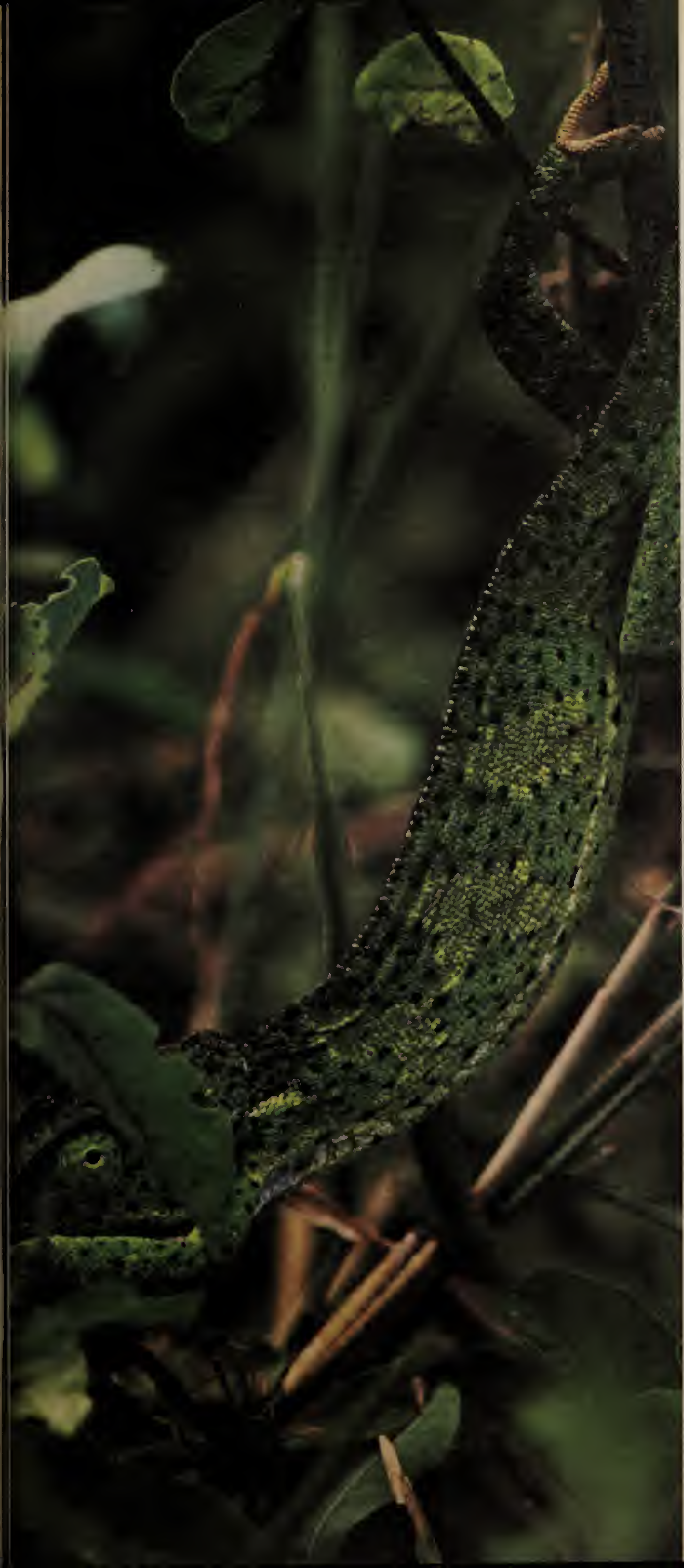

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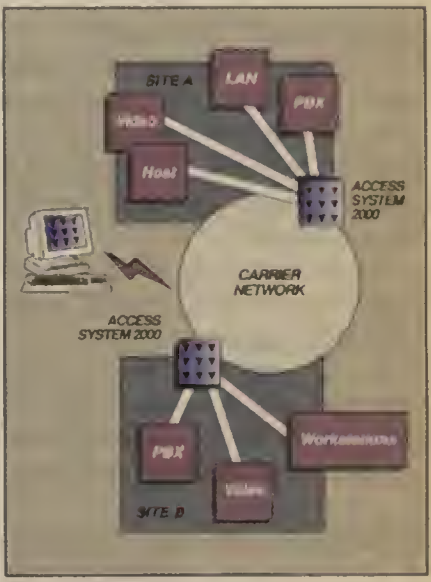

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Circle Reader Service #102

Texas expo to drive state's use of open systems

By Wayne Eckerson
Senior Editor

AUSTIN, Texas — The state of Texas will prove it's bullish on open systems in January, when it hosts the first open systems conference ever sponsored by a user organization.

The Open Systems Forum, scheduled for Jan. 14-16 here, kicks off the first part of the state's four-phase plan to migrate all 250 state agencies to an open computing architecture by the year 2002.

The forum will educate state workers about open systems and bring together users and vendors of open systems products, said Jerry Johnson, standards analyst for the Lone Star State's Department of Information Resources, who is spearheading the state's migration to open systems.

All state agencies have been invited to attend the forum, as well as representatives from other states and more than 300 corporations in Texas. Johnson said he expects that about 400 people will attend the conference, which will feature more than 25 educational sessions and exhibits from about 50 vendors, including AT&T, Digital Equipment Corp., IBM, Novell, Inc., Timeplex, Inc. and Unisys Corp.

"The forum will help clear up the confusion users have about open systems and how to implement such systems," Johnson said. "It will also give vendors a chance to hear the issues that users face in adopting open systems."

Texas is making an aggressive push to open systems partly because most of its 250 state agencies cannot communicate with one another. Texas has 52 separate networks, and its agencies have more than a thousand mainframes and minicomputers running different operating systems and protocols.

Moreover, Texas executives believe open systems could help ease the state's $4 billion deficit by reducing costs through elimination of redundant operations and fostering information sharing between agencies to improve productivity.

The four-phase plan, announced this summer, calls for the state to hold educational and training programs as well as build prototype systems during Phase I (1992-1993). In Phase II (1994-1995), state agencies will put together migration plans, and in Phase III (1996-1998), agencies will begin implementing their open systems plans. In the final phase (1999-2001), agencies will complete the migration to open systems.

Speakers at the Open Systems Forum will include users as well as representatives of open systems groups, such as the Corporation for Open Systems International, the User Alliance for Open Systems and others. Joint sessions over the three days will examine the business case for open systems, strategic planning issues, technical concerns and open systems migration strategies.

Technical sessions will provide updates on such things as the Industry Government Open Systems Specification, a common Open Systems Interconnection profile being developed by the National Institute of Standards and Technology (NIST), NIST's Applications Portability Profile, the Government Network Management Profile, and X/Open Company, Ltd.'s X/Open Portability Guide and Common Application Environment models.

Breakout sessions will be divided among four tracks exploring management issues, including migration strategies and training, distributed computing architectures, database and transaction processing standards, and local- and wide-area network issues.

The conference costs $125 if registration is sent before Dec. 20 and $150 after that date. The conference will be held at the Stouffer Austin Hotel. For more information, call (512) 475-4700. ☑

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HP, Novell team on new version of NetWare to close DOS-Unix gap

By Timothy O'Brien
West Coast Bureau Chief

PALO ALTO, Calif. — Hewlett-Packard Co. and Novell, Inc. are expected this week to unveil plans to develop a new version of NetWare for HP's Reduced Instruction Set Computer (RISC)-based computers and broaden an agreement for HP to market NetWare.

The new NetWare effort should help close the gap between the native version of NetWare for DOS servers and Unix versions. In addition, the agreement will enable HP to offer its DOS-based personal computer users a shrink-wrapped version of native NetWare, much like IBM already does.

Although neither Novell nor HP would confirm details of the widely expected announcement, analysts said the deal will likely mirror the pact Novell signed with IBM last spring. That arrangement calls for IBM to resell a shrink-wrapped version of native NetWare and develop an AIX version of the operating system.

HP is expected to develop a NetWare for Unix version that runs on its HP 9000 RISC-based Unix computers as well as other devices. Currently, its Portable NetWare product runs on HP 3000s and other workstations.

HP was one of the first licensees of Portable NetWare — now called NetWare for Unix — and analysts predict there will be an increased effort on the part of both vendors to align NetWare for Unix with native NetWare.

Specifically, analysts said, HP would like NetWare for Unix to support such na-

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NTIA calls for greater carrier accountability for net outages

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The head of the National Telecommunications and Information Administration (NTIA) last week said carriers must be held more accountable for network outages and possibly even be required to compensate users for downtime.

Janice Obuchowski, who heads NTIA and serves as an adviser to the president on technology issues in that role, made her comments during a speech at a Practicing Law Institute conference here. The remarks come amid continuing concern here about the reliability of the public switched network following several local and long-distance outages.

The Federal Communications Commission last week began digging into a report submitted by Bell Communications Research that examines causes of Bell Atlantic Corp. and Pacific Bell network outages last summer in an attempt to determine what steps it could take to prevent similar occurrences.

The FCC is also poring over comments filed by users, carriers and state regulators on new outage reporting requirements proposed by the agency. Users said they think the FCC must go further in requiring carriers to report net outages quickly, suggesting action the agency should take to reduce the chance of failures.

During a lengthy outage, companies dependent on telecommunications can lose millions of dollars in business. However, carriers' tariffs protect them from having to compensate users for lost business. They are only liable for the cost of lost telephone service.

The inability to recoup losses, coupled with the frequency and scale of outages this year, has put pressure on the FCC to act. Congress has asked the FCC to implement a national set of network standards specifying mandatory performance levels.

Obuchowski went even further when she suggested last week that carriers

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DEC adds RISC servers, backs Windows NT OS

By Jim Duffy
Senior Editor

BURLINGAME, Calif. — Digital Equipment Corp. last week announced a spate of products including three new Reduced Instruction Set Computer (RISC) servers and network software for its Ultrix systems.

The vendor also said it will sell and support Microsoft Corp.'s Windows NT, a 32-bit operating system with built-in networking features that is expected out in late 1992.

DEC said it will provide Windows NT, which includes networking features such as messaging, directory services and database access, on its new DECstation 5000 series of workstations.

The DECstation 5000 incorporates MIPS Computer Systems, Inc.'s R4000 microprocessor, making it compatible with the desktop computing design supported by the 200-member Advanced Computing Environment (ACE) consortium. DEC and Microsoft helped found the ACE group, and Windows NT is part of that environment.

Analysts said the agreement underscored the expanding joint development and marketing relationship between DEC and Microsoft.

"It represents a shift in [DEC's] emphasis from Unix to NT, with NT possibly becoming the focus of the company's RISC efforts," said Dave Smith of International Data Corp. in Framingham, Mass.

The Windows NT operating system is intended to run on any ACE-compatible platform, including servers. DEC brought out three of them last week.

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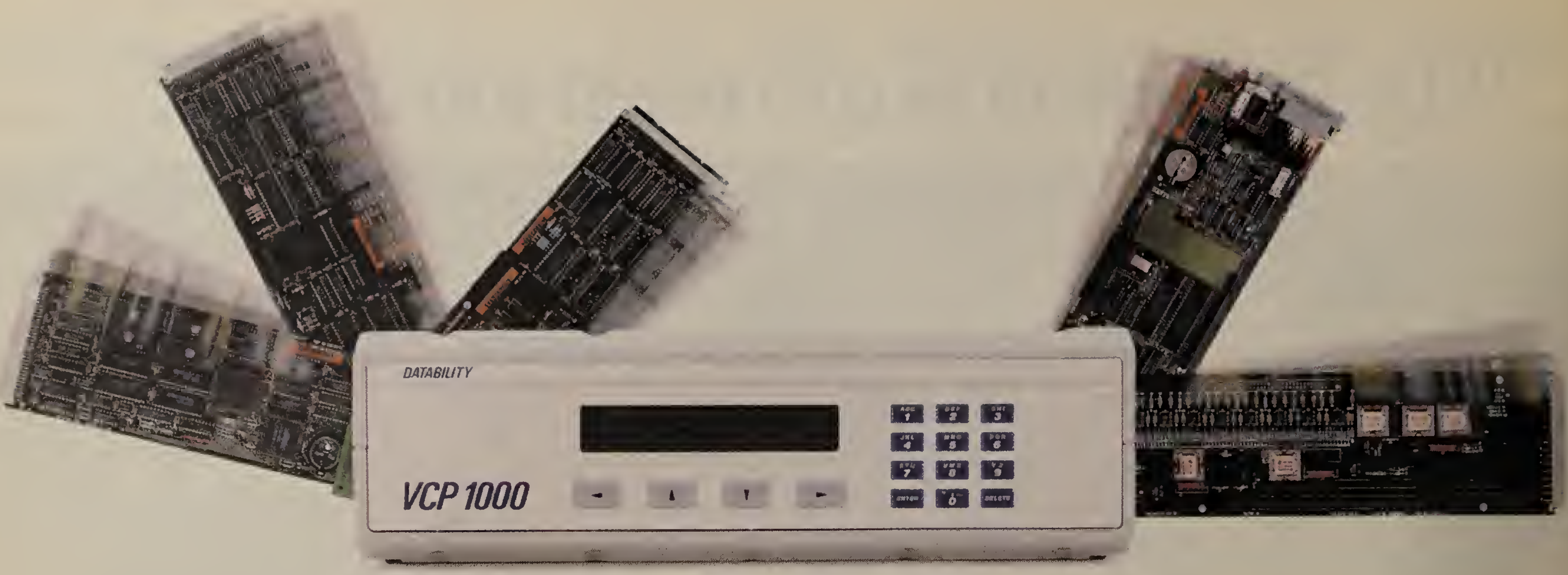

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

Cabletron Systems, Inc. has spent $18 million developing its Spectrum network management system, which the Rochester, N.H.-based intelligent wiring hub vendor started shipping this past spring, a company spokesman said. Cabletron has sold fewer than 100 copies of Spectrum but is still on schedule for sales of the product, he added.

People & Positions

Hughes LAN Systems, Inc., a Mountain View, Calif., maker of local-area network gear, last week named **Steve Bell** director of marketing.

Bell will be responsible for directing day-to-day product marketing activities for Hughes LAN Systems' five product lines, including its new Enterprise Hub and Monet Simple Network Management Protocol network management products.

Bell replaces Peter Filice, who was recently named vice-president of customer service.

Parallan Computer Inc., a Mountain View, Calif., network servers maker, last week appointed **Stanley Davis** as vice-president of sales.

Davis will oversee all sales activity for Parallan in North America. He assumes these responsibilities from company cofounder David Saxby.

Previously, Davis was vice-president of value-added marketing at Unisys Corp.'s Convergent Technologies unit.

Borland International, Inc., a Scotts Valley, Calif., manufacturer of database and other software, last week named **Kelsey Selander** vice-president of marketing just weeks after she resigned as Lotus Development Corp.'s

(continued on page 10)

UB to buy 50% of NetWorth to gain low-end hub line

Move provides migration path to Access/One.

By Bob Brown
Senior Editor

SANTA CLARA, Calif. — Ungermann-Bass, Inc. last week said it will buy a 50% stake in NetWorth, Inc., a move that provides it with a quick fix to broaden its intelligent hub product mix and address user demand at the low end of the market.

Ungermann-Bass also views the equity investment as a means to establish itself at sites that employ NetWorth's low-end hubs and to nurture those users for eventually tying together the smaller hubs with Ungermann-Bass' Access/One intelligent wiring hub.

Under the agreement, which was expected, the companies will exchange technology and market each other's products. Ungermann-Bass paid "several million dollars" for its stake in NetWorth, but company officials would not divulge specific financial terms of the agreement.

Stephen Diamond, Ungermann-Bass' group director of corporate strategy, said that by working together, his company and NetWorth can provide users with products for both their enterprise and departmental nets.

"We want to keep our high-end focus, but at the same time, we know the department is a critical area to address," Diamond said.

Ungermann-Bass currently targets the high end of the hub market via direct sales of its Access/One intelligent wiring hub and NetDirector net management system, but it lacks products designed to serve small departmental local-area networks.

Ungermann-Bass could have opted to scale down its own products to serve small LANs but decided that buying a stake in NetWorth would allow Ungermann-Bass to get into the low-end market sooner as well as retain its product development and marketing focus on the high end. Under terms of the equity partnership, Ungermann-Bass will tap NetWorth's resellers to provide its customers with low-end hubs.

NetWorth, on the other hand, will gain access to Ungermann-Bass' worldwide direct sales force for selling products into areas beyond its reseller channels' reach. The relationship will also let NetWorth provide its customers with a growth path from departmental LANs to enterprise LANs, said John McHale, NetWorth's president and chief exec-

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INDUSTRY BRIEFS

NCR, Teradata to merge. NCR Corp., which earlier this year was acquired by AT&T, last week agreed to merge with Teradata Corp., an El Segundo, Calif., computer maker. The agreement, which will be conducted as a stock swap, is worth about $520 million.

NCR acquired about 9% of Teradata last year and uses the company's parallel processing technology in its System 3600 and 3700 computers.

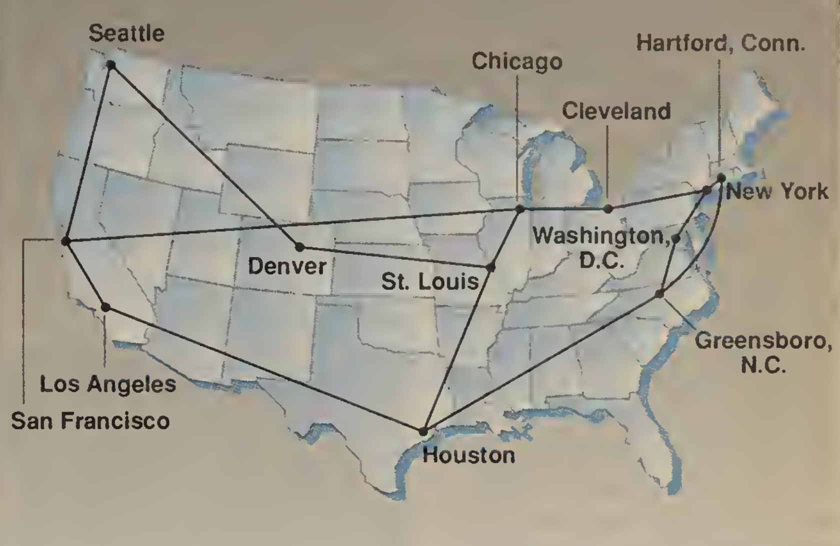
NCR acquired Teradata to take better advantage of its strengths in parallel processing technologies and computers designed to run relational databases, an NCR spokeswoman said. NCR hopes to offer improved products by further integrating its expertise in on-line transaction processing with Teradata's relational database expertise, she added.

Teradata is expected to benefit from the merger by having access to larger financial, marketing and distribution resources, as well as general-purpose computer and communications technologies.

Evernet to resell Infonet services. Infonet Services Corp., an El Segundo, Calif.-based value-added network provider, last week announced that it has signed an agreement with Evernet Systems, Inc. under which Evernet will resell Infonet's global network services. Under the agreement, Evernet will resell Infonet's InfoLAN service for high-speed local-to-wide-area network connectivity, X.25 public data network services

(continued on page 10)

Internet backbone goes T-3



ANS has built a nationwide T-3 backbone net that supports the Internet and can be used by educational institutions as well as private companies to exchange research and commercial data.

GRAPHIC BY SUSAN SLATER   SOURCE: ADVANCED NETWORK & SERVICES, INC., ELMSFORD, N.Y.

Users' fears mount over NSFNET upgrade

Internet users worry outages will become common as vendors use net as product testing ground.

By Ellen Messmer
Washington Correspondent

ELMSFORD, N.Y. — Several recent outages on the National Science Foundation Network (NSFNET) have heightened concerns among Internet users that such disturbances will become more common as the net is migrated to T-3 speeds.

But vendors and service providers say their NSFNET teaming relationships are paying off in the form of technology advances that will improve network service levels in the years to come.

Users fear that the recent disruptions indicate vendors are deploying unproven technology to support the NSFNET's shift to T-3 speeds. Further, they suspect such outages will crop up repeatedly as the network is upgraded to gigabit speeds.

"The National Science Foundation should ensure that technology be deployed very carefully," said Laura Breeden, executive director at the Federation of Research Networks (FARNET), an association of about 30 regional network providers for the Internet. Their nets are connected by the NSFNET backbone.

Breeden said significant disruptions have affected the regional Internet providers in the past few months. "There's a feeling that if the NSF had stepped in earlier, the problems would have been mitigated," she said.

About 3,000 research institutions and companies throughout the world, representing an estimated 500,000 Internet users, are connected to NSFNET, whose traffic volumes have grown 250% per year since 1987.

The effort to migrate the NSFNET to T-3 speeds is being coordinated by Advanced Network & Services, Inc. (ANS). ANS is a nonprofit company formed last year by IBM, MCI Communications Corp. and Merit, Inc., a consortium of Michigan universities.

Under the arrangement, Merit is providing network management support, while MCI is supplying T-3 circuits and IBM is using a prototype T-3 router as the basis for the network upgrade. IBM recently installed the first of those prototype routers at 12 sites on the nationwide network.

But a dramatic jump in Internet traffic — from five billion packets per month in October 1990 to 11 billion per month today — overtaxed the NSFNET's existing T-1 backbone and forced ANS to prematurely cut over Internet traffic to the T-3 backbone. As a result, some portions of the backbone failed, stranding users.

The problem, according to ANS President Allan Weis, was with the prototype IBM routers, which failed to interface with carrier switches, data service units and routers on the T-1 net and regional subnets. Weis said the issues have since been resolved.

"One thing we truly learned is that you don't want to roll out experimental technology in production," he said. "The installation of T-1 for NSF went so smoothly, it caused us to be overly optimistic about T-1 to T-3."

Both users and vendors

(continued on page 10)

Fears mount over net upgrade

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agreed that the network problems they experienced should serve as an example for future builders of the National Research and Education Network (NREN), the gigabit-speed network to be built on the foundation of the NSFNET by 1996.

"The lesson we learned is the deployment of leading-edge technology is going to have problems," Weis said.

FARNET recently issued a policy proposal on improving NSFNET management in the future.

FARNET urged NSFNET to ensure in future backbone procurements that the network provider be held more accountable for service quality. Breeden said members of NSFNET are working to define a "performance matrix" that the future NSFNET can use to define performance standards.

But vendors that have signed joint development agreements with ANS emphasize that, despite the outages, the organization has managed to speed development of new technology for the net.

Cisco Systems, Inc., which began working with ANS this year, said ANS helped it develop its first T-3 router, which was released a year ago. ANS has purchased a few dozen of the T-3 routers for the T-3 backbone.

Cisco also hopes to team with ANS when the network contract is opened for rebidding in February 1992. The current contract expires next November. NSF has already said it hopes to name two backbone providers ("NREN is one step away from reality," *NW*, Dec. 2).

Allan Weis

According to Ed Kozell, director of business development and field operations at Cisco, "The reason the two companies are working together is because the largest collection of networks today is the NSFNET. The regional nets are composed of hundreds of routers, many of them Cisco's."

Tests and trials on NSFNET are helping Cisco develop its Integrated Intermediate System to Intermediate System router to handle both the Transmission Control Protocol/Internet Protocol and International Standards Organization protocols. Cisco hopes to have the router ready late next year.

"ANS has a test network, and we're using it," Kozell said. Cisco anticipates that it will partner with ANS to develop routers for the planned Synchronous Optical Network upgrade of NSFNET.

Cisco expects to be on the ANS team in the upcoming bidding war for the new dual-backbone NSFNET award. Industry sources say about 10 vendor teams will likely bid on the contract.

UB to buy 50% of NetWorth

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utive officer.

NetWorth, based in Irving, Texas, focuses on the departmental LAN environment with its Series 4000 hubs and sells its products through about 100 resellers. The company, whose initial investor was Novell, Inc. Chairman Raymond Noorda, has designed its hubs for Ethernet-based NetWare networks, McHale said.

The companies have already begun working together on integrating their product lines, McHale said. Ungermann-Bass, for example, has implemented support for NetWorth's Simple Network Management Protocol Management Information Base in its NetDirector net management system, which will let NetDirector manage NetWorth devices.

NetWorth is also providing Ungermann-Bass with the necessary technology to provide a link between NetDirector and the Discovery Management System, a net management system that is planned for rollout by NetWorth in February 1992, he added.

While officials from both companies declined to provide detailed information on which other products or product enhancements the companies will unveil next year as a result of the partnership, McHale said NetWorth plans to build token-ring support into its hubs using technology garnered from Ungermann-Bass. Currently, NetWorth sells only Ethernet hubs.

One reason Ungermann-Bass and NetWorth were attracted to each other is that to date, they have little overlap in their customer bases, McHale said. Whereas NetWorth sells to departmental LAN managers, Ungermann-Bass tends to sell to corporatewide net strategists and MIS directors. However, as those two groups of users converge, there will be more opportunities for Ungermann-Bass and NetWorth to sell to the same people.

Charlie Robbins, director of communications research at Aberdeen Group, Inc., a market research firm in Boston, said the Ungermann-Bass/NetWorth agreement could prove to be a winner for both vendors and their customers. Ungermann-Bass has lost sales momentum of late and needed a boost, he added. NetWorth gains credibility by partnering with an established hub market player.

> McHale said NetWorth plans to build token-ring support into its hubs using technology garnered from Ungermann-Bass.
>
> ▲▲▲

"This is a smart move by Ungermann-Bass," he said. "They realize they can't only provide users with the enterprise solution and they can't do everything themselves. Large users also want off-the-shelf, easy-to-use hubs in their remote offices and departments, and that's where NetWorth comes in."

People & Positions

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vice-president of marketing communications.

Selander will be responsible for managing corporate marketing communications activities and developing new marketing programs. She will report to Spencer Leyton, senior vice-president of business development.

Rolm Co., a Norwalk, Conn., supplier of private branch exchanges and voice-messaging equipment owned by IBM and Siemens AG, recently announced three executive changes within its marketing ranks.

Thomas Ruch was named to the newly created position of director of strategic marketing. He will be responsible for national and international account marketing and strategic marketing programs. Previously, Ruch was Rolm's director of marketing operations.

Stephen Inman was appointed to the newly created position of director of applications and operations for Rolm's marketing group. He will oversee programs in industry marketing, field operations, financial marketing and telemarketing. Inman was formerly director of Northeast sales.

Kurt Fawkes was named vice-president of channel marketing, a newly created position. He will be responsible for Rolm Resale Systems, international distribution and the Rolm Product and Services Representative organization. Previously, Fawkes was vice-president of service for the Midwestern area.

Industry Briefs

continued from page 9

and Virtual Private Data Networks. Evernet, which has 20 offices in 17 cities, is a network systems integration company' best known for reselling LAN gear.

Firm adds resellers. SynOptics Communications, Inc., a Santa Clara, Calif., maker of local-area network intelligent hubs, last week announced a systems integration and resale agreement with Olivetti Systems & Networks, located in Ivrea, Italy.

Under this agreement, Olivetti's Enterprise Premises Services, a newly created group in the Olivetti service organization, will resell SynOptics' LAN products. The pact extends to all European subsidiaries of Olivetti Systems & Networks, a company in the Olivetti Group.

AT&T inks EDI pact. AT&T EasyLink Services and Unisys Corp. last week announced a comarketing agreement under which AT&T EasyLink Services will recommend Unisys Easy access Data Interchange plus software to its customers.

AT&T EasyLink Services will recommend the Unix-based Unisys electronic data interchange software to complement its AT&T EDI network service.

PictureTel buys in U.K. PictureTel Corp., a Peabody, Mass., maker of videoconferencing equipment, recently agreed to buy a portion of DCE Communications Group plc, a U.K.-based reseller of PictureTel gear. Financial terms of the agreement were not disclosed. Under the pact, a number of DCE employees will join PictureTel. Also, existing DCE inventory and service contracts related to PictureTel will be transferred to PictureTel.

The move is designed to strengthen PictureTel's direct videoconferencing sales and support operations in the U.K.

McCaw Cellular and Oracle team

continued from page 2

plications.

"A broadcast topology means that, unlike a system dependent on wire lines, it's not necessary to add a new line for each person receiving data," said Dick Brass, president of Oracle's data publishing subsidiary and supervisor for the data broadcast service. "A broadcast system does not care how many people are listening."

Unlike very small aperture terminal satellite systems, which require deployment of dish antennas, the service will use small, self-contained receivers that are expected to cost less than cellular phones, Brass said.

The receiving devices, attached to computers or installed at data centers, would likely be made by a third-party manufacturer, he added.

McCaw, the largest cellular phone carrier in the U.S., and Oracle, a leading developer of database software, have agreed to establish an as-yet unnamed joint venture to operate and offer the service.

A spokesman for McCaw, whose network covers 100 cities across the country and is being expanded to more sites, claimed that McCaw's net is large enough to enable the data broadcast service to reach users in most of the U.S.

Although the companies only announced plans to develop and test the service, which could take on many shapes, sources familiar with their plans said it would probably work as follows.

An information provider, such as a software developer issuing program upgrades, would forward data to a central data center operated by the McCaw/Oracle venture via leased line, courier or some other method. The data center would store and manage the data on computers running Oracle database software.

The data would then be sent via some means, such as a satellite link or terrestrial line, to regional data centers from which it would be distributed via McCaw's cellular facilities to end users.

Although the planned service will be point-to-multipoint, the companies are contemplating ways to allow for data recipients to acknowledge the receipt of data, Brass said.

Let the testing begin

When testing begins in the Seattle area next year, the companies plan to use the 800-Mhz band that McCaw uses for its network, although the data would not travel over the same channels as McCaw's voice traffic, Brass said. McCaw and Oracle last week applied for an experimental license from the Federal Communication Commission to test data broadcasting in the 1.85- to 1.99-Ghz band.

Craig McCaw, McCaw's chairman and chief executive officer, said the carrier is confident it "can deploy the service without disrupting the operations of other spectrum users or our existing customers."

The service is seen by observers as a way for McCaw to derive a new revenue source from its existing network infrastructure. McCaw's network currently can be used for data transmission but only in a point-to-point fashion using modems.

While Oracle's top priority is to decide whether the data broadcast service is viable in the U.S., it hopes to provide similar services with various partners in other countries.

TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

AT&T said its worldwide network handled a record 157.8 million calls last Monday and that all but 211 calls got through on the first try. The calling volume — about 30 million calls more than a normal business day's volume — eclipsed the previous record of 156.2 million calls set on July 8, the Monday following the July Fourth weekend.

Carrier Watch

New England Telephone and Telegraph Co. last week announced a contract with Unisys Corp. under which the computer vendor's platform will be used to provide central office-based voice mail service in Massachusetts.

New England Telephone will use centralized large-scale processors and remote switching components to provide voice mail services that it claims will be more efficient than putting dedicated processors in every central office. New England Telephone and Unisys declined to divulge other details of the contract.

AT&T last week said it now has over 270 Integrated Services Digital Network Primary Rate Interface (PRI) customers across the country, accounting for 542 sites and representing more than 800 D channels. PRI delineates how a T-1 pipe is configured to support 23 64K bit/sec B channels and one 64K bit/sec D signaling channel. One D channel can handle signaling for several PRI links.

Southern Bell Telephone Co. last week said it has more than doubled the number of Centrex lines in its region since divestiture, passing the one million mark. ◻

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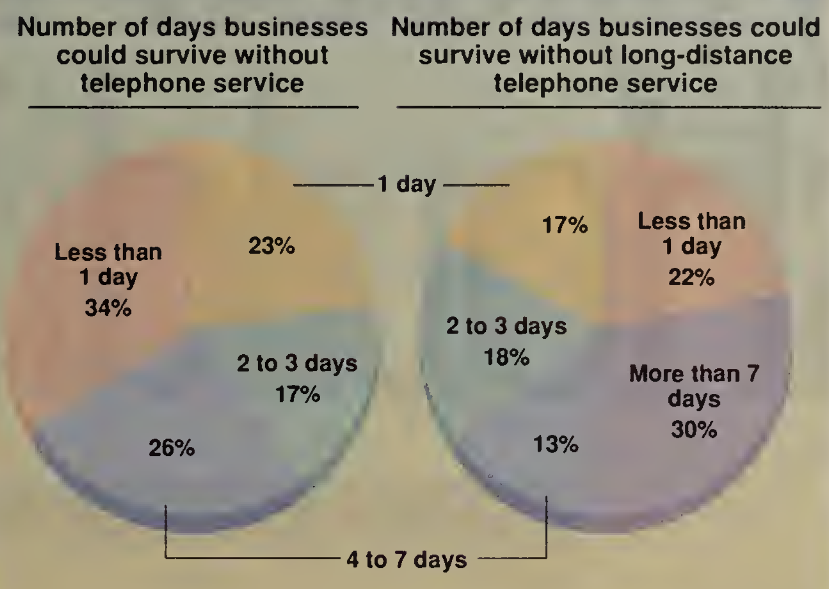

Based on a survey of 90 New York City users.

SOURCE: THE MAYOR'S TASK FORCE ON TELECOMMUNICATIONS NETWORK RELIABILITY, NEW YORK
GRAPHIC BY SUSAN SLATER

US Sprint boosts billing features in its FONView

Also discusses new plans for EDI billing of users.

By Bob Wallace
Senior Editor

KANSAS CITY, Mo. — US Sprint Communications Co. last week announced enhancements to FONView, its personal computer-based telecommunications management system, that give users more flexibility in billing back internal customers.

US Sprint also announced it is testing the ANSI X12 Consolidated Service Invoice/Statement (Transaction Set 811) to bill customers via electronic data interchange and plans to offer the invoicing service in the first half of 1992. The carrier is beta-testing Transaction Set 811 with Union Pacific Railroad Co.

Transaction Set 811 supports as many as nine levels of billing detail compared to just two levels with the previous 810 standard. AT&T already offers users bills via EDI using Transaction Set 811, while MCI Communications Corp. does not. (AT&T embraces new standard for EDI billing," *NW*, Sept. 23).

FONView upgrade

FONView base software runs on IBM Personal Computers with 512K memory and a hard disk. With FONView, users receive call detail on a floppy disk for all US Sprint offerings except the Virtual Private Network service and can use the data in billback applications and the generation of reports.

The system was designed for users that spend between $250 and $100,000 a month on US Sprint services.

The new module, FONView's ReBilling System (RBS), enables users to view records of calls grouped under headings by employee, department, site and number dialed.

Users can also view records of calls made to and from an 800 number and those made using the carrier's FONCard calling card.

This capability paved the way for an enhancement that enables users to rerate calls, which means US Sprint customers can now apply discounts and taxes to calls by employee, department, site or client. This fact is important for users with large billback applications.

Before RBS, companies typically used call detail on the US Sprint floppy disk with other programs, including Lotus Development Corp.'s 1-2-3 and dBase, to assign calling costs and create customized bills.

"We took a hard look at what our customers were doing with the call detail information so we could automate and incorporate those processes in RBS," said Robin Loyd, US Sprint's FONView and EDI product manager. "We found that a large number of customers were using other programs to [manipulate] call detail."

RBS also allows US Sprint users to create a wider array of reports. In the past, users could only produce standard reports that tracked calling by account code, by the day and time calls were placed and by the country to which the calls were made.

RBS is available now and is free of charge to US Sprint customers. ◻

Travelers uses ACD to boost productivity

New system will improve customer service, cut costs by reducing time spent on customer calls.

By Ellen Messmer
Washington Correspondent

ALBANY, N.Y. — In an effort to improve customer service and save money, Travelers Insurance Co. last month integrated its automated voice response units into a new automated call distribution system.

The Albany office was the first site selected for integration, which is intended to alleviate the need for customers calling in for assistance to have to repeat the same information if they are transferred.

Once callers key in their customer identification number to the voice response unit, that data is sent to a Travelers' mainframe, which pulls up the customer's file from a database and delivers it in screen format to the service agent to whom the call has been transferred.

Tom Calabrese, assistant director of data processing at the Travelers, said the new call distribution system is already proving its worth, and the company plans to roll it out to a dozen other sites in the future.

Similar types of calls

Calabrese said the Travelers installed the automated voice response system in all its offices two years ago to handle incoming customer calls. At the time, about 40% of all calls to the Travelers' 800 line were from customers asking whether a submitted health or dental claim form had been received. Many of these calls could have been handled without the intervention of an operator.

The voice response units ask customers to input their social security number and the nature of their call so it can be handed off to the appropriate agent. The system also allows callers to opt to talk to a live operator.

Travelers later decided to upgrade the system so customers would not have to repeat information if their call was transferred, allowing service agents to handle calls more efficiently.

Customized software

Calabrese said AT&T and Aristocom International, Inc. provided customized software to allow the AT&T Conversant voice response unit, connected to an AT&T Definity private branch exchange, to transfer the customer ID number to an IBM host housing the customer database information.

An IBM front-end processor

(continued on page 14)

WASHINGTON UPDATE

BY ANITA TAFF

Sikes sets goals for FCC. At an informal press briefing last week, Federal Communications Commission Chairman Alfred Sikes outlined five key goals for the agency during 1992: developing new technologies such as personal communications networks (PCN), high-definition television and low-orbit satellites; allocating spectrum for new wireless technologies; introducing competition into the local loop; adapting regulation to reflect changing markets; and improving productivity at the FCC.

The FCC is already moving forward on this agenda. Last week, it held a hearing to solicit advice from industry experts on PCN regulation and technical issues. The commission is also about to complete the first phase of a proceeding that is expected to result in competition for private-line access services in the local loop. The FCC will decide as early as next year whether to allow competition for switched access, Sikes said.

Another issue Sikes said the FCC will examine is opening the cable television market to telephone companies. Local carriers are prohibited from providing cable in their telephone service areas, but the FCC recently said they should be allowed to carry video programs produced by others.

The agency is also considering whether the carriers should

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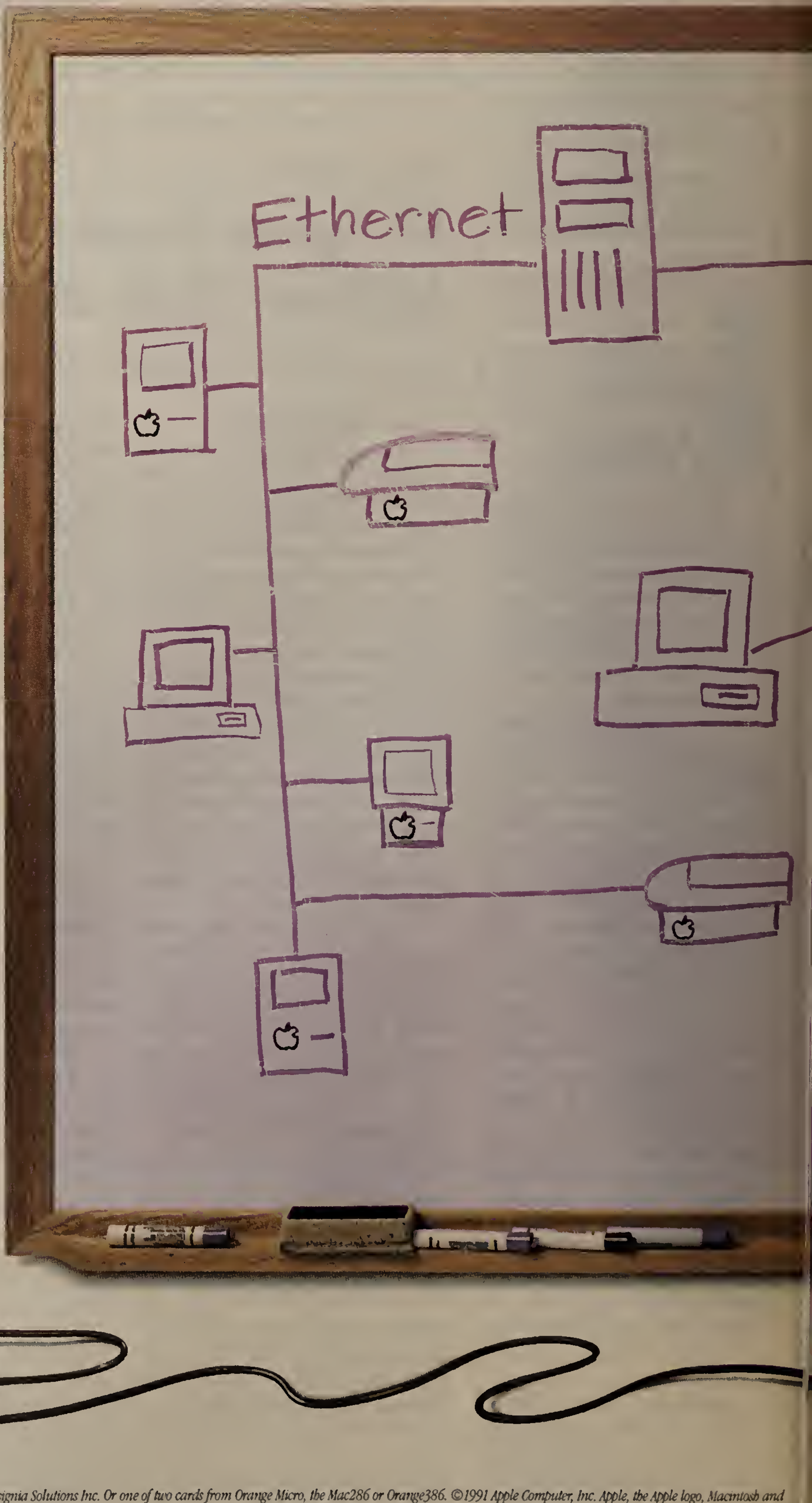

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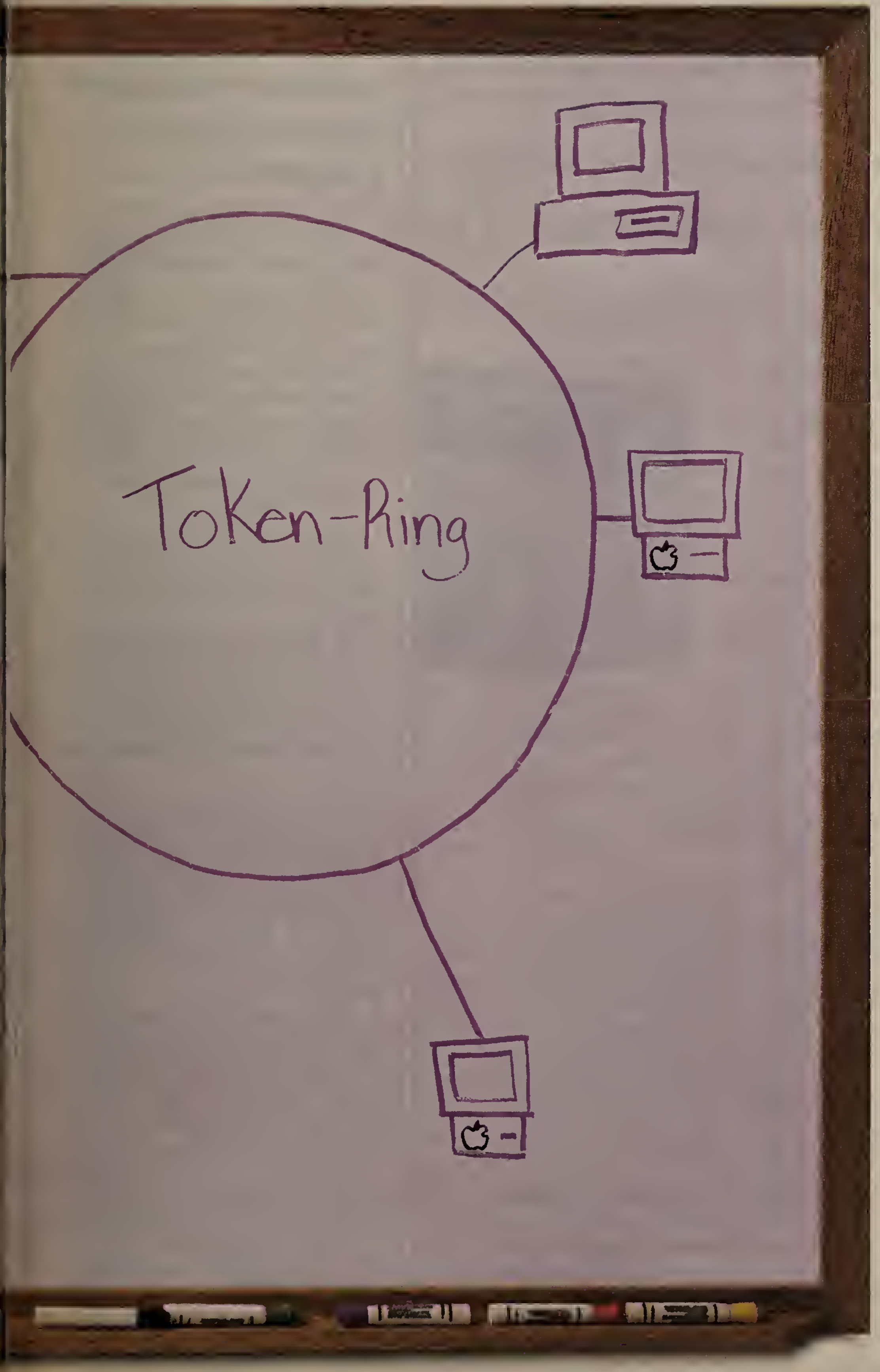

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ACD to boost productivity

continued from page 11

then transfers the customer's file over a 56K bit/sec line to an IBM 3174 cluster controller that directs the file data to an agent's IBM 3270 terminal. At the same time, the PBX is routing the customer's call to the agent's phone.

To achieve the automatic screen transfer, the company had to position an AT&T Integrated Services Digital Network gateway on an AT&T 3B2 minicomputer — even though the Travelers implementation does not use ISDN — and a Systems Network Architecture Personal System/2 gateway between the Definity PBX and the IBM mainframe. The gateways are needed because no standard interface between the Definity and IBM equipment has been implemented in the Travelers arrangement.

"The industry needs further integration; there are too many boxes needed," Calabrese said, noting that new protocols such as AT&T's Adjunct/Switch Application Interface offer a standard interface between switches and computers that will eliminate interim processor and translation functions.

"The good news is that the processors are very fast," Calabrese said, delivering the customer information quickly to the agent. And although the new system adds several layers of complexity, the calls will still continue to be delivered if any part of the system malfunctions, he said.

Calabrese said the new system should pay for itself within a year by shaving off about 20 seconds per call and making agents more productive. Because the company handles 160,000 calls a year, the seconds spared add up to significant dollar savings.

The company plans to expand the automatic screen transfer system to other internal company applications as well, such as Individual Savings Plan Status and Job Scheduling Status.

Calabrese emphasized that specialists in data, telecommunications and applications development personnel need to get involved to bring a new call distribution system on-line. "You have to get your best people involved," he said. ☐

Washington Update

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be allowed to provide programming. The FCC could only make a recommendation to Congress, which would have to rewrite law to allow for the change.

Sikes said he is in no rush to eliminate all rules keeping phone companies out of cable service. "I've never been interested in replacing one monopoly with another monopoly," Sikes said. "Removing all impediments to cross-ownership [of telephone and cable companies] would do just that."

In addition to those proceedings, Sikes said he is concerned about improving FCC productivity, in part because he expects a revenue crunch over the next few years.

This year, Congress authorized $7 million less for the FCC than the agency requested. Part of the money would have been used to hire about 50 employees, many of whom would have worked in the Common Carrier Bureau.

"I'm uncomfortable with the time it takes to do a number of things in the Common Carrier Bureau," Sikes said. "[If] we don't get additional resources, we're going to remain uncomfortable."

He said it is currently taking too long to handle complaints, rule makings and approval of new services. The loss of the $7 million also means the FCC will be slowed in getting new equipment such as computers, software and facsimile machines. "We've still got a lot of progress to make before we're working with modern information tools," Sikes said.

One area that Sikes said he thinks the FCC has addressed sufficiently is long-distance regulation. In August, the commission voted to significantly lessen regulation for AT&T. "I am not inclined to start a new proceeding to further refine long-distance regulation," he said. ☐

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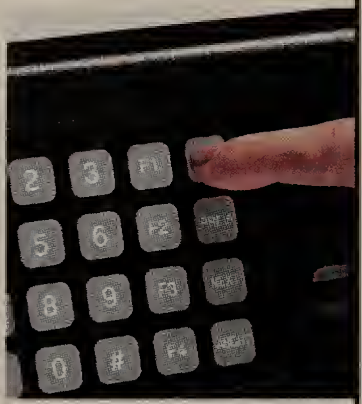

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DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

IBM has issued over 50,000 VTAM licenses. Additionally, more than 12,000 networks are registered to the IBM Information Network, with an average of six more being added each day, according to Rick McGee, manager of communication systems architecture in IBM's Networking Systems group.

Data Packets

T3plus Networking, Inc. of Santa Clara, Calif., last week announced a plug-in test module for its BMX45 bandwidth manager family of T-3 multiplexers. The module lets users conduct end-to-end circuit tests from a central site.

T3plus claims that the product, dubbed TEST module, is the first to support the High Speed Serial Interface (HSSI), an emerging industry standard for a physical data communications interface that operates at any speed between T-1 and about 50M bit/sec. TEST module also supports T-1, T-3 and V.35 interfaces.

Besides support for HSSI, the other key feature of the module is its ability to test an end-to-end link from a central location. Previously, users had to be on site to use diagnostic test equipment. Additionally, TEST module can diagnose links between BMX45s as well as connections to attached equipment such as routers and T-1 muxes.

Available now, TEST module costs $7,100.

Retix last week announced a suite of Open Systems Interconnection applications and protocols for the Unix System V Release 4 operating system.

The OSI wares are designed for software and systems ven-

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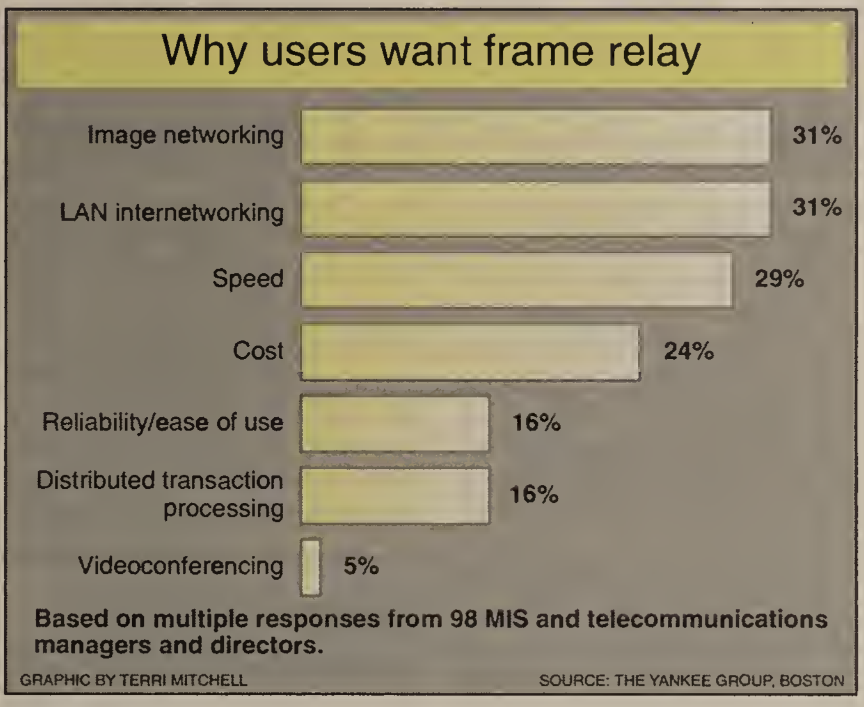

Based on multiple responses from 98 MIS and telecommunications managers and directors.

GRAPHIC BY TERRI MITCHELL

SOURCE: THE YANKEE GROUP, BOSTON

Unisys to bolster ties from CTOS stations to SNA nets

New E-mail, management, LU 6.2 packs debut.

By Paul Desmond
Senior Editor

SAN JOSE, Calif. — Unisys Corp. this week will announce a new suite of software that gives its CTOS workstations enhanced electronic mail and network management capabilities when linked to Systems Network Architecture networks.

As expected, Unisys said it will also announce CTOS LU 6.2 Release 5.0, which is a new version of its CTOS LU 6.2 implementation that lets numerous CTOS client workstations share a single LU 6.2 link to a host for client/server applications ("Unisys positions CTOS as APPC/LU 6.2 net gateway," *NW,* Dec. 2).

CTOS is a message-based multitasking operating system that runs on a series of Intel Corp. microprocessor-based workstations, each of which can be configured as a client, server or both. Some one million CTOS-based workstations have shipped since the early 1980s, said Bruce Halvorsen, director of program marketing at Unisys here.

The workstations are used primarily for distributed transaction processing applications in companies that need to link multiple branch sites to a central data center, often to IBM mainframes.

Key to the E-mail products is the new CTOS SNA Distribution Services (SNADS) 1.0, which is a full implementation of IBM's SNADS architecture for store-and-forward data delivery, said Steven Ballenger, manager of SNA interconnect at Unisys. CTOS SNADS lets a CTOS system act as the origin or destination point for data delivered between CTOS and SNA networks.

CTOS SNADS includes application program interfaces that users can employ to write their own programs, such as for file transfers, software distribution or any other application that is not time-sensitive, Ballenger said.

CTOS SNADS comes bundled with another new software package, CTOS OFIS Access SNADS 1.0, to provide an E-mail link between CTOS OFIS Mail users and users of the MVS and Application System/400 versions of IBM's OfficeVision.

Unisys also announced CTOS OFIS Access Professional 1.0, which links CTOS OFIS Mail users to those utilizing IBM's Professional Office System or the VM version of OfficeVision.

Both new Unisys mail packages allow users of IBM and CTOS mail systems to send and receive messages using their native formats without knowing the recipient's formal address, Ballenger said.

Net management

In the network management area, Unisys enhanced the ability for users of IBM's NetView to manage CTOS workstations from a NetView console.

With the new CTOS SNA/NM Entry Point Services 1.0, a NetView user can execute CTOS commands on any remote CTOS workstation for problem diagnosis and resolution, Ballenger said.

The product consists of both server and client software. The server software — only one copy of which is required per host connection from the CTOS network — routes commands and responses to the appropriate client. Client software running on each

(continued on page 16)

Utilities stress need for open networks

Top users claim new business pressures dictate open nets to gain competitive edge in tight mart.

By Ellen Messmer
Washington Correspondent

RESTON, Va. — Users from several major utilities recently said new competitive pressures are driving them to use standards-based networks for interconnecting power generation systems and business operations.

Users from Pacific Gas & Electric Co. of San Francisco, Public Service Electric & Gas Co. in Newark, N.J., and Central and Southwest Services Corp. of Dallas, hammered home the message to attendees at the recent User's Open Systems Conference here that the deployment of open systems is not a luxury, but a competitive necessity to gain a market edge.

The week-long conference was organized by the Corporation for Open Systems International and its member group, the User Alliance for Open Systems, whose members hail from large corporations such as The Boeing Co., E.I du Pont de Nemours & Co., General Motors Corp., Hughes Aircraft Co. and Texaco, Inc.

During a panel discussion at the conference, August Nevolo, chief telecommunications engineer at Pacific Gas & Electric and the new head of the User Alliance for Open Systems, said his company's managers need to quickly access data about power generating systems, substations and business operations in order to efficiently price services and handle troubleshooting for customers.

This information — housed in a wide range of proprietary databases and stand-alone computer systems scattered across hundreds of miles — is not easily accessed.

Nevolo noted that utilities' large corporate customers can currently purchase power from independent producers or even use power supplied by their own power generating systems.

"All the utilities, and industry in general, have increased competition, a factor utilities didn't face in the past," Nevolo said. In addition, regulators are instituting rate structures that reward efficiency.

Nevolo emphasized that utilities are trying to automate their electrical substations as well as integrate their power management communications facilities and business computer opera-

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Firms build user support for shift to X.400 networks

By Ellen Messmer
Washington Correspondent

RESTON, Va. — Two major network users recently mapped out strategies to implement X.400 backbones, underscoring key management factors influencing their decisions to move to Open Systems Interconnection-based networks.

Speaking at the recent Users' Open Systems Conference here, net managers from the Internal Revenue Service and The Boeing Co. shared their views about how to obtain management and user buy-in to X.400-based messaging backbones.

The IRS has already decided to build an X.400 backbone and is now hashing out details with managers at eight regional sites on how to handle electronic mail addressing.

Boeing said it has similar plans and is now internally circulating a technical proposal for the X.400 backbone in order to build consensus and obtain final management approval before moving ahead.

Nathan Sternberg, E-mail team leader at the IRS, said the agency plans to build a nationwide X.400 backbone for connecting the disparate IRS E-mail systems currently used by the agency's 150,000 employees.

Products available under the Treasury Multi-User Acquisition Contract awarded to AT&T should be sufficient for the job, Sternberg noted.

Designating domains

The IRS' plans call for the agency to divide the E-mail network into at least eight sections called private management domains (PRMD) to smooth E-mail processing across the organiza-

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Federal agencies decry new digital signature standard

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — Federal agencies and industry insiders recently criticized the government's proposed digital signature standard, calling it technically flawed and a financial burden to implement.

In letters of comment to the National Institute of Standards and Technology (NIST) Computer Systems Laboratory, federal agencies said if NIST mandates use of its proposed digital signature standard, they will have to redesign current systems to comply.

In August, NIST announced plans to adopt digital signature technology it created with the National Security Agency as a federally mandated specification.

The Agency for International Development (AID) said it agreed with NIST that there is a need for a digital signature standard, which would allow users to electronically seal messages so authenticity could be verified.

However, AID said in comments, "If this proposed standard becomes mandatory, it could necessitate a complete redesign of our current implementation of digital signatures. We have spent approximately $100,000 for hardware and software to support the implementation of a commercial product using the RSA [Data Security, Inc.] method, which is not compatible with the proposed standard."

The U.S. Department of Housing and Urban Development, which plans to start using electronic data interchange soon, said the lack of available products for the NIST digital signature standard presented a problem.

"For government agencies with an immediate need for a digital signature capability, what will be the alternative?" asked Donald Demetros, director of the Office of Information Policies and Systems for the federal department.

Martin Hellman, professor of electrical engineering at Stanford University in California, said that because the NIST digital signature standard does not address encryption of the message, "users who follow the standard will be at a severe disadvantage in terms of the privacy of their communications."

Hellman also criticized the 512-bit key size of the NIST digital signature standard as too short, asserting that it offers only marginal security. He suggested that the key size should be increased to at least 1,024 bits to ensure adequate security.

Firms build user support for shift

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tion's private network.

Designated PRMDs serve as E-mail processing points for messages originating from preset user domains. Each PRMD serves as a routing point, sending mail between the IRS' PRMDs or to an external public carrier's administrative management domain (ADMD). The ADMD is a designated node on a carrier's public network that handles distribution of traffic to companies' PRMDs, other ADMDs on the carriers' net or other public nets.

Curtis Royster, technical manager at the IRS' new telecommunications standards unit, which formed last year to coordinate planning for Government Open Systems Interconnection Profile networks, said cooperation with the eight regional managers is necessary to successfully complete the transition to X.400.

"Our regional [managers] have lots of computer systems that have to transfer mail," Royster said.

The regional managers will be responsible for managing the complex naming and addressing schemes for the computers handling E-mail on their portion of the networks.

Forming a routing plan

One of their main challenges is to coordinate a routing scheme based on the federal government's Network Service Access Points specification, which is a federal plan to identify computer types for routing via an OSI addressing scheme.

The goal of this effort will be to create a uniform routing plan for E-mail and a common method to update router tables on the backbone.

"It is imperative to come up with an addressing scheme on the router level," Royster said.

He noted that the agency also needs to standardize on how IRS organization names will look so messages can be delivered from both outside and inside the organization.

Once the backbone is in place, the IRS intends to link its existing proprietary E-mail systems to the backbone via gateways. The backbone will provide a long-term migration path for future native X.400 implementations as well as future deployment of X.500 Directory Systems.

The IRS is also working with regional managers to develop a common wish list of X.400 features. Once a uniform set of features is agreed upon, the IRS will issue an X.400 product standard and encourage users to buy according to that internal specification.

As yet, the IRS has not set a date for completion of the backbone.

Boeing gets going

Boeing, a strong proponent of OSI, is also making plans for an X.400 backbone.

Last year, the company received official management backing for OSI ("Enterprise net vision takes shape at Boeing," *NW*, Nov. 26). Plans for an X.400 backbone are now being circulated for comment and approval by both technical and high-level management.

Mike D'Annunzio, manager of data communications at Boeing Computer Services Co., said if the document is approved, it will serve as as guide for product selection.

"We plan to put in an X.400 native system," D'Annunzio said. The backbone will be a separate net from existing data backbones, will likely run at T-1 speed and be supported by fault-tolerant computers for maximum reliability.

Boeing is currently employing only one X.400 gateway, which is used to communicate with a handful of business partners. But D'Annunzio said the company plans to use other gateways to link proprietary E-mail systems to the backbone.

The X.400 project, which still must be approved by company officials, would be Boeing's first step to put into production the open systems network it has deemed vital for its future communications.

Unisys to bolster ties to SNA nets

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CTOS workstation executes commands, which are in the native IBM Network Management Vector Transport format, and sends responses to NetView.

In addition, Unisys announced the CTOS SNA/NM Distribution Manager 1.0, which works with IBM's NetView Distribution Manager to support software distribution and change management for CTOS workstations from an IBM host. With the product, users can remotely retrieve software from CTOS workstations, install new software and be automatically informed of any installation errors.

"Centralized management is key in a distributed CTOS environment," Ballenger said. "We know of no other non-IBM product that cooperates with NetView Distribution Manager."

CTOS SNA/NM Distribution Manager is priced between $1,500 and $3,000, and will be available in June 1992. The rest of the new products are available now. CTOS SNA/NM Entry Point Services 1.0 and CTOS OFIS Access Professional 1.0 each cost between $3,000 and $6,000, depending on configuration. CTOS SNADS 1.0, bundled with CTOS OFIS Access SNADS 1.0, ranges in price from $6,000 to $12,000.

Data Packets

continued from page 15

dors that are developing OSI-based networking products for Unix environments. The applications include X.400 messaging, X.500 directory services, File Transfer, Access and Management (FTAM), and Virtual Terminal.

The products are available now. Pricing varies depending on individual customer contracts.

Timeplex, Inc. recently announced enhancements that enable its Timepac System X.25 packet switches to dynamically dial up switched circuits for augmenting leased lines at peak times or in the event of a failure.

By employing the software-only upgrade, users can set thresholds for line utilization. When a threshold is exceeded, the switch will dial additional bandwidth using switched services at up to 256K bit/sec. The services can be accessed via modem or Integrated Services Digital Network links. Alternatively, users can configure the switch to use bandwidth from a private network based on Timeplex Link+ T-1 multiplexers.

Timeplex also enhanced Time/View 2500, the Timepac System management system, to support a trouble ticketing capability that helps users track problems through to resolution. The capability includes a feature that prompts users to address problems remaining unresolved beyond user-prescribed time periods.

All of the enhancements are available now. Timepac Systems range in price from $5,000 to $30,000, while Time/View 2500 costs between $18,000 and $63,000.

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Utilities stress open net need

continued from page 15

tions so both the marketing and engineering divisions can share information quickly. That enables them to determine load management, energy efficiency and pricing.

Open Systems Interconnection is the right road to take for ensuring that interoperability is achieved, he emphasized.

Nevolo's company has begun purchasing plant and office equipment that conforms to the Utility Communications Architecture, an OSI-based specification issued last year by the Electric Power Research Institute. Many utilities hope that by moving to an open systems-based network, they can share information electronically with customers, thereby providing better customer service, Nevolo said.

"We may connect to as much as 10% of utility customers in the next few years," Nevolo said.

Pacific Gas & Electric has begun to interconnect its legions of local-area networks over wide-area nets via routers using the OSI End System to Intermediate System (IS) and IS-IS routing protocols.

Worthwhile expense

The cost of open systems products still remains high compared to proprietary or Transmission Control Protocol/Internet Protocol equivalents. But Nevolo explained that expenditure justification should be based on life-cycle costs rather than short-term investment.

Joe Lola, a network consultant with Central and South West Services, Inc., a Dallas-based electric and gas utility, said an internal study found that users want on-demand access to data, no matter where it resides in the company.

"The users told us, I want the information to do my job when I need it, regardless of where the information may reside," Lola said. "There's no way proprietary solutions can provide this for them rapidly."

Central and Southwest Services is now beginning to tie together its four utilities via OSI. "[OSI] products are available," Lola said. "I want to avoid TCP/IP if at all possible."

TCP/IP, a de facto industry standard, was frequently mentioned at the conference as a competing protocol that could easily sidetrack efforts for migrating to OSI, although coexistence with TCP/IP is generally viewed as necessary.

Raymond Castellano, telecommunications manager in the engineering and planning division of Public Service Electric & Gas Co., said utilities maintain separate databases for their monitoring systems, power plants, substations and business operations, and the lack of a common means to access and share files presents a problem.

Castellano said he is heartened to see vendors, such as DAQ Equipment, Inc., a maker of substation equipment, also making an appearance at the conference.

"Many small vendors — not the large ones — are providing critical systems," he said.

The lack of power systems equipment interoperability has been so ingrained, he said, that "It was a big deal for the vendors to just support the RS-232 interface."

LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

The market for groupware and local-area network-based office automation systems will grow by about 50% a year, from $41 million in 1990 to $320 million in 1995, according to International Data Corp. (IDC), a Framingham, Mass., market research firm. IDC recently issued a report titled "The Groupware and LAN IOS Market Review and Forecast."

Netnotes

Shiva Corp. last week said it will offer a promotion for users to obtain software from StarNine Technologies, Inc. and Neon Software for use with its FastPath LocalTalk-to-Ethernet gateway.

Shiva said all FastPath 5 units will ship with a coupon for a free two-user license of StarNine's MailLink SMTP gateway and a demonstration disk of Neon's RouterCheck network monitoring software.

The FastPath will also include a coupon that gives FastPath 5 customers a 20% savings on RouterCheck and a substantial discount off the price of future MailLink SMTP purchases. The coupons and discount are only included in U.S. and Canadian versions.

StarNine's MailLink software supports transparent connections between Microsoft Corp. Mail, CE Software, Inc. QuickMail and Sitka Corp. InBox Plus users and electronic mail users on Simple Mail Transfer Protocol nets.

Neon's RouterCheck is a network management tool that lets users track and monitor FastPaths and other routers from an Apple Computer, Inc. Macintosh located anywhere on the internetwork. It monitors net traffic and maintains listings of router types, locations and addresses.

3Com rolls out low-end 10Base-T LAN wiring hub

Fixed-port hubs can be linked to form larger hubs.

By Maureen Molloy
Staff Writer

SANTA CLARA, Calif. — 3Com Corp. last week announced a new line of local-area network wiring hubs that support the IEEE 10Base-T standard and cost as little as $90 per port.

The LinkBuilder 10BT family initially consists of two 12-port models — the LinkBuilder 10BT, which can connect 12 devices via 10Base-T ports, and the LinkBuilder 10BTi, which provides the same features as its sister model but comes bundled with support for the Simple Network Management Protocol (SNMP).

Both hubs are fixed-port hubs, meaning they are enclosed units that typically cannot be expanded by adding port expansion cards, as is possible with chassis-based hubs.

However, 3Com said the LinkBuilder 10BT hubs can be linked via an expansion cable to form a single logical hub of as many as 48 users at substantially less cost per port than traditional chassis-based hubs. Both models are suitable for installation in small businesses, remote branch offices or small work group clusters.

According to the company, both the LinkBuilder 10BT and LinkBuilder 10BTi can be attached to three other units via a new Small Computer System Interface-2 Hub Expansion Cable, thereby forming a single logical hub connecting a maximum of 48 users.

The Hub Expansion Cable acts as a 10M bit/sec flexible backplane to interconnect several units into a single logical 24-, 36- or 48-port hub. Creating one logical hub enables users to avoid a four-hop limit of fixed-port repeaters.

With traditional fixed-port hubs, expanding the network requires users to add another hub by cascading or multidropping off a port on an existing hub. This results in four separate logical hubs, uses valuable ports on the hubs and limits the size of the network because of the four-hop limit.

Built-in management

The LinkBuilder 10BTi is a 12-port intelligent 10Base-T hub that offers the same features as the LinkBuilder 10BT but also provides SNMP support for workstations attached to the hub or to LinkBuilder 10BT units attached via the Hub Expansion Cable.

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Adobe technology to aid in document transfers

By Joanne Cummings
Staff Writer

BOSTON — Adobe Systems, Inc. recently demonstrated technology that will eventually enable users to exchange, view and print complex documents among multiple computer platforms while retaining the specific look and type styles of the original.

The technology, based on Adobe's popular PostScript page imaging language, is designed to make transferring and viewing complex documents as easy as doing the same to ASCII text.

According to Frank Boosman, product marketing manager for the company, the first products based on the technology will be unveiled next year.

The products will draw from existing products, including: the Adobe Type 1 Font Format software, a de facto standard defining 10,000 styles of type fonts; Adobe Type Manager software, used to manage characteristics such as the width and size of particular type fonts; Multiple Master Typefaces, which mimic fonts that are not available on a particular printer or display device; and the PostScript Level II page description language.

The result will be a streamlined version of PostScript that retains all the necessary type font management capabilities for viewing and printing documents but without much of the coding and overhead inherent in traditional PostScript.

The technology will allow documents to be created on Apple Computer, Inc. Macintoshes, as well as DOS- or Microsoft Corp. Windows-based machines, and viewed and printed by any other Macintosh, DOS- or Windows-based device, according to Boosman.

Eventually, Adobe plans to add editing capabilities, as well as audio and video support, al-

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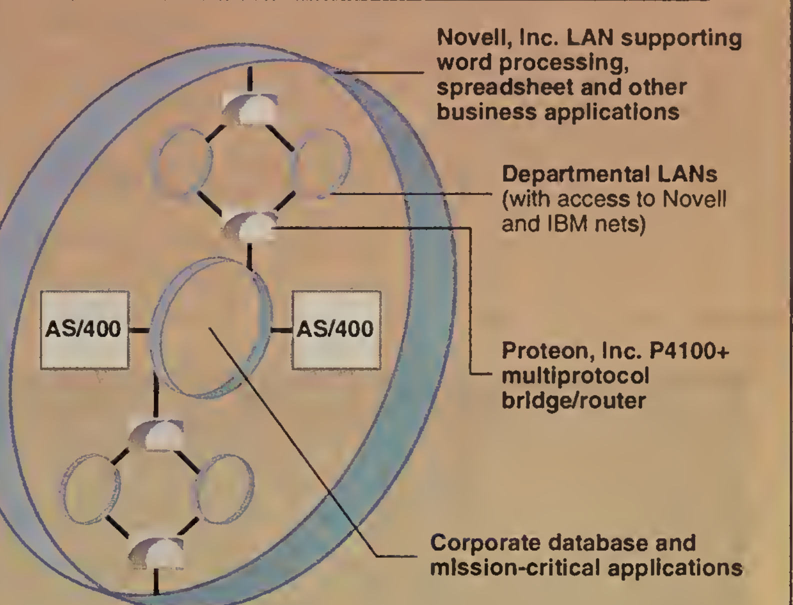
Multiprotocol bridge/routers simplify multitier net integration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Proteon, Inc. P4100+ multiprotocol bridge/router
Corporate database and mission-critical applications

By using Proteon multiprotocol bridge/routers that support Novell's Internetwork Packet Exchange and source routing, Reliance National maintains redundancy while eliminating many devices.

GRAPHIC BY SUSAN SLATER

SOURCE: RELIANCE NATIONAL, NEW YORK

Reducing net devices helps safeguard LAN

Insurance company employs multiprotocol devices to improve net mgmt., reduce points of failure.

By Salvatore Salamone
Features Writer

NEW YORK — Replacing single-function internetwork devices with multiprotocol bridge/routers has enabled Reliance National to reduce network points of failure while improving net management and retaining redundant paths between two local-area network backbones.

The company had installed the backbones in an effort to separate mission-critical applications from departmental LAN applications when it outgrew the COBOL application on its Novell, Inc. NetWare LAN.

Programmers at Reliance National, a 4-year-old $1.2 billion provider of casualty insurance, developed the COBOL-based insurance application in house. "The application served us well," said Jim McCormack, a network analyst at Reliance National. "But we experienced phenomenal growth and found we needed to upgrade the insurance processing system to handle the volume. The COBOL application was not keeping pace."

The company ultimately decided to look for a canned application that could fit the bill. After a short search, it settled on an application that ran on an IBM Application System/400. Reliance National put the corporate database and other mission-critical applications on the AS/400 and kept applications such as word processing and spreadsheet programs on departmental LANs.

Departmental LAN users can access corporate data such as customer claims records, which reside on two AS/400s, from their workstations and also download information from the corporate database to departmental file servers.

Keeping the mission-critical and departmental applications separate allows departments to develop their own applications while letting the company control the development of long-term mission-critical applications and optimize use of the AS/400s.

Mission-critical applications include a database application, insurance applications and an accounts payable application, while departmental applications include WordPerfect, Lotus Development Corp.'s Lotus 1-2-3 and dBase, which run on Novell file servers.

Linking the environments, however, proved cumbersome because each of 18 departmental LANs needed access to the interdepartmental NetWare backbone supporting Novell's Internetwork Packet Exchange (IPX) protocol, as well as access to the AS/400 LAN, a token ring supporting the source routing protocol.

"We had an IBM bridge and a Novell bridge for every LAN," McCormack said. "For redundancy,

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Reducing net devices helps safeguard LAN

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we had two of each type of bridge." That meant every LAN required four internet devices to connect to the two backbones.

McCormack started looking for a multiprotocol bridge/router to simplify this configuration because he was afraid all the hardware it required represented potential points of failure.

Multiprotocol bridge/routers would enable the company to support IPX and source routing with a single box, so each departmental LAN would need only two devices in order to connect to the two backbones instead of four.

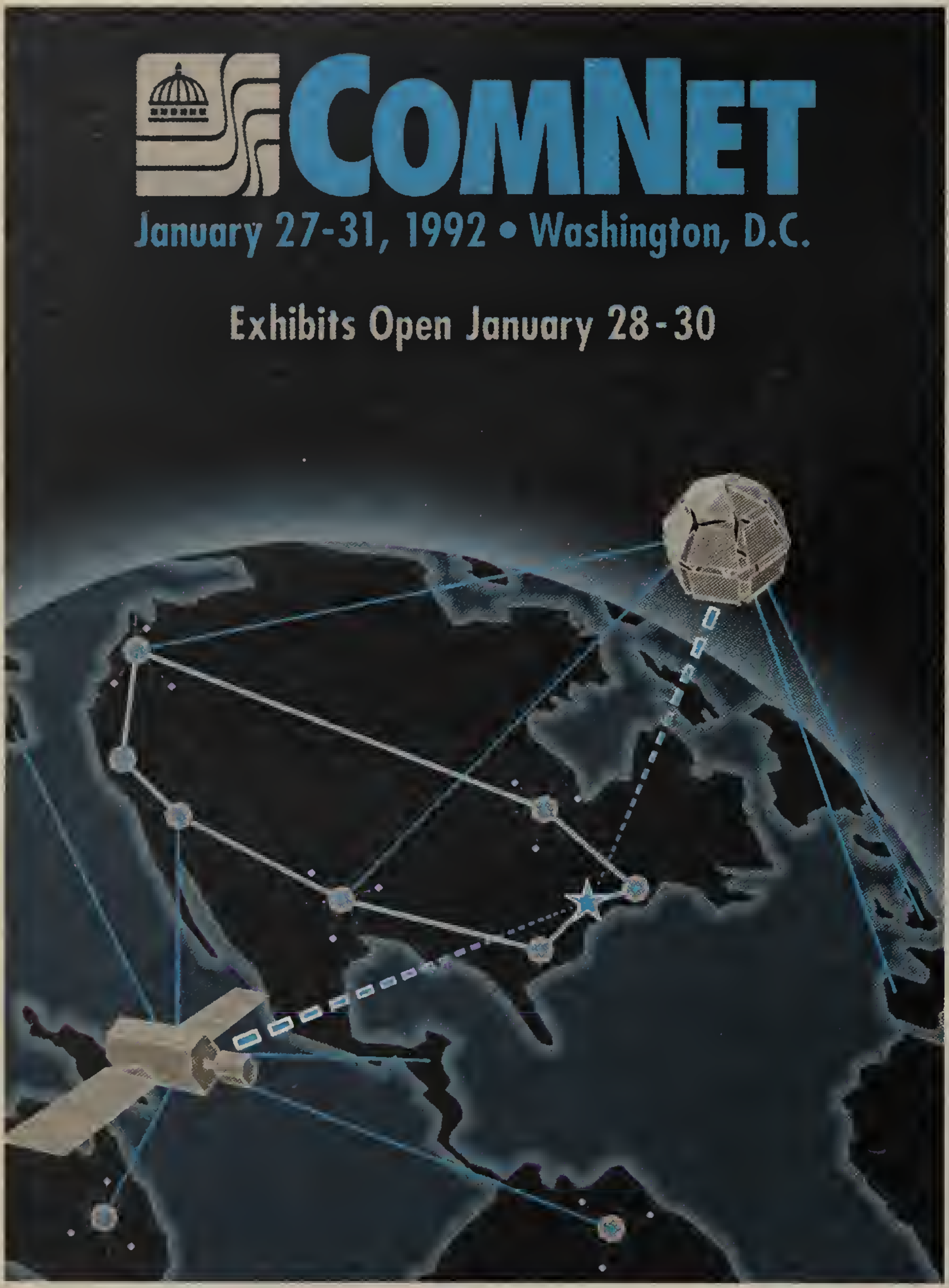
Reliance National looked at interconnection products from vendors such as Cisco Systems, Inc. and Wellfleet Communications, Inc. but found that the products were often overkill for its needs. "We looked at several [vendors'] products and found the Proteon [Inc.] P4100+ offered the best price/performance for our needs," McCormack said.

Reliance National was able to further consolidate equipment because the P4100+ allowed two departmental LANs to share a common unit. The P4100+ has three token-ring slots, so it can be used to attach two departmental LANs to one of the backbone LANs. This allowed Reliance National to use two P4100+s for connecting two LANs to both backbones.

> Reliance National was able to consolidate equipment because the P4100+ allowed two departmental LANs to share a unit.
>
> ▲▲▲

In this configuration, one P4100+ links two LANs to the AS/400 net and a second P4100+ connects two LANs to the Novell backbone LAN (see grahic, page 17). "This allowed us to eliminate redundant devices," McCormack said. In the old scheme, it would take eight devices rather than two to accomplish the same thing.

In addition to reducing the number of devices, the P4100+s provide better network management. The Proteon bridge/routers use the Simple Network Management Protocol, thereby simplifying management of the devices. ◻



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Technology to aid in document transfers

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though it declined to provide a specific time frame for that.

How it works

Documents can be translated into the new PostScript language using a simple conversion command, Boosman said.

If a file is created on a Macintosh, for example, Adobe plans to provide a special LaserWriter printer driver that will perform the conversion to the new PostScript language. Thus, any file, whether it was saved as a PostScript file, may be converted using the Macintosh print menu, then viewed and printed by a different computer — regardless of the specific type fonts available.

If a file is created in a DOS or Windows environment, however, it would have to be saved as a PostScript file and then converted to the new language using a prototype utility program.

The advantage to the new technology is that it enables documents created using any software program to retain their specific format, including type fonts, pictures and graphics, when shared among different platforms.

Adobe said users can send a converted file, which is usually equivalent to an ASCII file, to a user on a different computer platform and have that user view it in exactly the same form in which it was created.

Without this technology, files viewed on a computer that did not have the same fonts or software as the originating station would appear garbled because most computers substitute fonts for those they do not have, Boosman said.

Adobe's type management features will also enable users to view the document at different levels of magnification without sacrificing type quality.

According to Bob Fennell, an analyst at Dataquest, Inc., a research firm in San Jose, Calif., the technology could provide a great opportunity for information providers, such as publishers.

"If information providers can maintain the aesthetic quality of their document, no matter what [computer] platform it's viewed on, that becomes a tremendous tool for the dissemination of that information," he said.

Fennell added that Adobe's technology could provide a means for converting paper-based publications, such as magazines or encyclopedias, to electronic media without sacrificing any of the design or type formatting that is a trademark of the publication. ◻

MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

Dialogue

What issues will a company encounter if it tries to institute centralized control over deployment and management of local-area networks?

“Five years ago, [our] telecommunications department led the charge in deploying LANs throughout the company. We didn't want to lose control, so we planned to be in charge.

“We have more than 300 LANs, and every one of them has been engineered and installed by our department.

“We've avoided the proliferation of different types of LANs by taking the approach that if [a group] wanted a LAN, we wouldn't resist or tell them to do it on their own. We helped them. That way we could design the network we wanted from the beginning.”

Robin Layland
Engineering consultant
The Travelers Corp.
Hartford, Conn.

“[You] need to provide a basis — in terms of having a business plan — for why the LAN should be centrally installed and managed. The biggest pitfall can be traced back to not knowing what you want to accomplish.

“There are also power struggles. We've had a lot of political turf wars with divisional infighting about which network operating systems to use. [You can] minimize problems by providing end users with as much training and information as necessary.”

Larry Frederickson
PC programmer and
LAN administrator
Valmont Industries, Inc.
Valley, Neb.

“What's needed is a corporate policy that states that IS selects, installs and maintains the components for the LAN. Unfortunately, we don't have a policy like that here at L.A. Gear.

“This [raises] issues of who will manage what, who will select the components, etc. Each individual group wants to have control over the LAN, and both sides have valid points. End users claim they don't want to wait around to get things done, like getting software loaded onto the system.”

Andrew Marks
Data communications manager
L.A. Gear, Inc.
Marina Del Rey, Calif.

LAN managers to get help in troubleshooting nets

Software package compiles traffic stats for review.

By Maureen Molloy
Staff Writer

WALNUT CREEK, Calif. — The AG Group is planning to release a software package that will make it easier for users to identify and resolve problems with their local-area networks.

The Network Vendor Support Program consists of a set of software tools designed to help users of Ethernet-based LANs capture statistics about network traffic that can be handed over to vendor service representatives for problem diagnosis.

There is no cost to the user for the product. The tools will be licensed to vendors who, in turn, will provide them to users as a way to simplify the task of troubleshooting a network.

The software, which runs on an Apple Computer, Inc. Macintosh, was developed by The AG Group, based here, and will be unveiled at the MacWorld Expo/San Francisco show next month. As part of the program, The AG Group will provide training to vendor support staffers who are responsible for explaining and resolving LAN problems.

“We're essentially providing this service as a way to facilitate communication between network managers and their vendors,” said David Burk, marketing manager at The AG Group.

According to Joshua Cole, a technical support specialist at Nuvotech, Inc., a manufacturer of Macintosh-based networking equipment in Sausalito, Calif., this snapshot in the form of packet traffic is a succinct method of communicating what is occurring on a network at any given moment.

Rooting out the problem

Cole said the product will enable him to provide better assistance to network managers by helping them identify their problems more quickly.

“Instead of spending hours on the phone with the user having him try to describe what is going wrong, he can simply send us a copy of the traffic loads so I can analyze them and tell him what's wrong with it,” Cole said.

Previously, vendors would send technicians, with a network analyzer in hand, to the user's site to get a sampling of network traffic loads. The technician would then take the information back to the office to perform an analysis and interpretation.

With the new program, troubleshooting can be performed

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EXECUTIVE BRIEFS

BY WAYNE ECKERSON

Users and vendors unite. CAM-I, Inc., a nonprofit manufacturing research consortium funded by large U.S. manufacturing companies, has announced a new research program that will explore methods for improving supplier and customer relationships in the manufacturing industry.

The first meeting of the Quality Customer/Quality Supplier program will take place Dec. 11-12 at the Grosvenor Resort Hotel in Orlando, Florida.

For more information, call John Harcrow at (817) 860-1654.

MBAs in manufacturing. A recent survey of professors at 23 of the nation's leading business schools shows a renewed interest in manufacturing among students in MBA programs.

According to the survey, which was sponsored by Fujitsu America, Inc., business schools are adding manufacturing courses in response to student interest. Eighty-three percent of those surveyed said their school has a manufacturing curriculum, compared to 43% surveyed five years ago. Also, 61% of those surveyed said their school offers a manufacturing and operations management major, compared to 48% five years ago. More than 80% of the respondent schools said more students are taking manufacturing and operations courses than five years ago and that recruitment of MBA students by manufacturing companies has increased.

You can't always get what you want

Users and vendors rank 5 possible scenarios describing the information technology industry in 1997.

Ranked on a scale of 1 to 5, with 1 being most desirable/probable

	What we want to happen		What we think will happen	
Future scenarios	**Users**	**Vendors**	**Users**	**Vendors**
Open systems prevail	1	2	4	3
Network-based computing takes hold	2	1	5	5
Technology advances drive market	3	3	3	4
Users stuck with incompatible systems	4	4	1	1
Users locked into proprietary systems	5	5	2	2

Based on 170 users and 59 vendors attending INTEROP 91 Fall in San Jose, Calif.

GRAPHIC BY SUSAN SLATER SOURCE: NORTHEAST CONSULTING RESOURCES, INC., BOSTON

Open systems faces difficult crossroads

Vendor support of standards seen as key by users to curtail movement toward consolidation.

By Wayne Eckerson
Senior Editor

BOSTON — Users and vendors are pessimistic about whether a truly open computing and network environment will become a reality before the end of this century, even though both camps say they want open systems to prevail.

Despite the cynicism, there is still time to make the open systems vision a reality if users take concerted action in the next year or two to get vendors to support standards, said Jim Herman, principal of Northeast Consulting Resources, Inc., an information technology consulting firm here.

Herman said users must act before the promise of open systems is swallowed up by the movement toward consolidation, which is putting more power in the hands of fewer information technology suppliers. As vendors grow bigger and stronger, users will have less chance to shape the direction of the industry.

Herman draws many of his observations from a series of Future Mapping workshops that Northeast Consulting has conducted regularly during the past several years. In the workshops, user and vendor participants are asked to rank five scenarios that they think best describe the computer and communications industry in 1997.

One scenario depicts an information technology industry in which open systems prevail and standards are universally implemented, while in another, the net takes center stage and cooperative processing and network computing become key paradigms.

The other scenarios depict an industry in which new technologies, such as broadband networks and speech recognition, drive user purchases; an industry that is strangled by cost cutting and multiple incompatible systems; and one that is dominated by a few vendors and their proprietary systems (see graphic, page 20).

In Future Mapping workshops conducted at INTEROP 91 Fall, users and vendors both ranked the open systems scenario in their top two choices when asked which scenario they hoped would be realized by 1997.

But when asked which they think will actually reflect the industry in 1997, they ranked open systems below two or three other alternatives (see graphic, this page).

Users and vendors agreed that the most probable scenario for 1997 is one in which users have reduced capital expenditures on information technology and are stuck supporting three or more generations of technology, most of which don't interoperate. The next most likely scenario, they said, is one in which the industry is dominated by six multinational suppliers that lock users into their proprietary systems.

Interestingly, users and vendors weren't as pessimistic about open systems last year. At that time, both groups ranked open systems in second place as the scenario most likely to occur by

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Managers to get help in troubleshooting

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more efficiently. The user simply saves a "packet dump" to a disk and transmits it via electronic mail to the vendor's technical support engineers.

"With a packet dump, we can zero in on the user's problem almost immediately," said William Artelt, manager of technical support at Asante Technologies, the leading supplier of Ethernet cards for Macintosh networks. "With the number of vendors and devices growing, we often spend a lot of time trying to identify which vendor's equipment is causing the problem. A packet dump can often pinpoint the particular product at issue."

The technical support applications, which are called EtherHelp and LocalHelp, contain key technology from The AG Group's protocol analysis products, EtherPeek and LocalPeek. These tools enable users to set filters based on address and protocol.

The address filter monitors data packets going to and from a specific machine, while protocol filters focus on specific types of traffic. This setup allows the user to capture only packets of interest, thereby fine-tuning the focus of a capture session.

A three-hour seminar will also be held during MacWorld to provide training to vendor engineers in conjunction with the release of the software. Topics to be covered include how packets can pinpoint network problems, what type of information packets provide about network functions and how to instruct network managers to query a network for information.

The AG Group will periodically provide additional training programs.

Although aimed at vendors, the seminar will also benefit users by helping them understand their own network operation, Cole said.

"You don't need to know every frame of a packet unless you're an engineer," he said. "But if the user can understand what's going on in a transaction between a workstation and a server, for instance, that will make him more aware of potential network problems." ◼

Open systems faces difficult crossroads

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1997. They ranked the two less positive scenarios described previously in third and fourth place out of the five.

Herman said the growing cynicism about open systems is the result of a number of factors. First, users who have wrestled with the multiplicity of standards and the various ways in which they are implemented by vendors have found it an onerous task to implement open systems as compared to integrated proprietary systems.

Second, converting to standards requires long-term planning and investments, which run counter to the short-term spending philosophies at most U.S. firms, Herman said.

Also, vendors have held up the process because they cannot form business plans for competing in an open systems marketplace, he said.

Like most of his clients, Herman is pessimistic about the future of open systems.

Future scenarios

A. Open systems prevail. Proprietary processing and communications architectures fade, while prices drop and competition shifts to the application software level.

B. Network-based computing takes hold. All processing occurs on computers distributed across high-speed networks. Cooperative processing becomes a software design paradigm.

C. Technology advances drive market. Users snap up applications based on broadband networking, speech recognition, image processing and multimedia, among other things.

D. Users stuck with incompatible systems. Cost-cutting pressures reduce capital expenditures on technology, leaving companies with at least 3 generations of incompatible equipment.

E. Users locked into proprietary systems. Intense consolidation leaves only 6 major information technology suppliers that push proprietary packages offering greater functionality and integration than open systems alternatives.

GRAPHIC BY TERRI MITCHELL
SOURCE: NORTHEAST CONSULTING RESOURCES, INC., BOSTON

He believes that the industry has already begun consolidating and, by 1997 or so, only a small number of multinational suppliers will exist. These vendors will be able to exert much greater power over the marketplace and user buying choices than suppliers do now.

Herman has not completely tolled the death knell for open systems, however. He says users need to act now to make the vision of open systems a reality before vendor consolidation moves the industry in a different direction.

"There is a window of opportunity right now for users to move the industry in the direction of open systems," Herman said. "Users must pressure vendors to incorporate standards in the their next generation of products because by 1997, it will be too late. By then, industry consolidation will have put too much power in vendors' hands." ◼

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Circle Reader Service #106

GLOBAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

World News

As expected, **BT North America, Inc.** last week became the first service provider to announce commercial availability of frame relay service between the U.S. and Europe.

BT North America said it has extended its U.S.-based ExpressLANE frame relay service to London and Paris. In addition, it plans to offer the service in Amsterdam and Frankfurt, Germany, early next year. Company officials also said they will probably begin supporting fractional T-1 ExpressLANE service at speeds of 128K, 256K and 512K bit/sec in 1992. Currently, BT North America only offers ExpressLANE service at speeds up to 56K bit/sec ("BT North America to offer int'l frame relay service," *NW*, Dec. 2).

A consortium led by GTE Corp. and including AT&T last week finalized its purchase of Venezuela's monopoly carrier, **Compania Anonima Nacional Telefonos de Venezuela (CANTV).** The consortium paid nearly $1.9 billion for a 40% controlling stake in CANTV. GTE owns 51% of the consortium's CANTV interest, while AT&T owns 5%, a GTE spokesman said.

The other consortium members are Telefonica de Espana, the Spanish carrier, which owns 16%; Electricidad de Caracas, a Venezuelan utility, which also owns 16%; and Consorcio Inversionista Mercantil Cima, a Venezuelan banking company, which owns 12%, according to the

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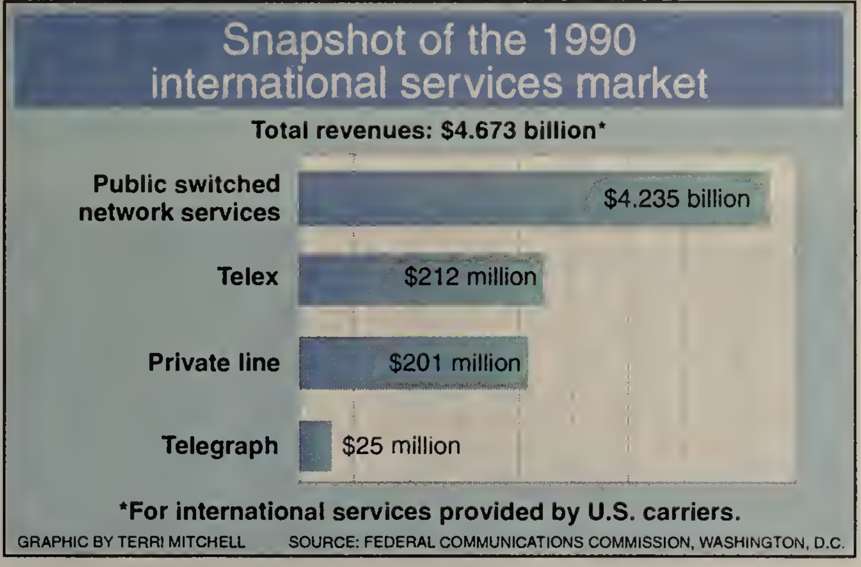
Snapshot of the 1990 international services market

Total revenues: $4.673 billion*

*For international services provided by U.S. carriers.

GRAPHIC BY TERRI MITCHELL SOURCE: FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON, D.C.

Cable & Wireless bails out of deal to acquire TRT/FTC

By Barton Crockett
Senior Editor

VIENNA, Va. — Cable & Wireless PLC recently backed out of its planned acquisition of TRT/FTC Communications, Inc., citing a number of negative factors that outweighed the benefits of the deal.

Users and analysts said the merger could have helped Cable & Wireless PLC by letting the company's U.S. carrier, Cable & Wireless Communications, Inc., use TRT/FTC's facilities to expand its international reach. Likewise, TRT/FTC could have benefitted by using Cable & Wireless Communications' facilities to expand its domestic services in the U.S.

But with the merger halted, both companies said they are pursuing alternative strategies to expand their services. And some users said the fact that TRT/FTC's poor business performance contributed to the failure of the merger has made them question its financial stability.

"It would seem to me that in today's competitive market, [the failure of the merger] would potentially affect the financial viability of the company," said Rob Rich, international telecommunications manager for Digital Equipment Corp., in Acton, Mass. DEC operates one of the world's largest international private networks, with digital private lines from the U.S. to more than a dozen other countries.

Cable & Wireless PLC, based in London, owns major stakes in 36 carriers, including 100% of Cable & Wireless Communications, which expects revenues of $400 million this year. TRT/FTC, with annual revenues of about $200 million, is one of the largest U.S. providers of international network services.

Pacific Telecom, Inc., in Vancouver, Wash., owns 85% of TRT/FTC while France Cables et Radio owns the rest.

John Davenport, chief executive officer of Cable & Wireless North America, Inc., the North American unit of Cable & Wireless PLC and parent of Cable & Wireless Communications, said the company ended the merger because Cable & Wireless PLC tried, unsuccessfully, to renegotiate the $174 million purchase price with Pacific Telecom. Cable & Wireless PLC wanted to renego-

(continued on page 26)

U.S. to relax rules on satellite services

Bush administration plans to permit unrestricted competition for int'l switched satellite services.

By Barton Crockett
Senior Editor

WASHINGTON, D.C. — The Bush administration recently announced plans to allow unrestricted competition in the provision of international switched services via satellite by 1997.

The new policy is expected to eliminate nearly all restrictions on the transport of international public switched telephone services by private satellite operators competing with the International Telecommunications Satellite Organization.

Secretary of State James Baker and Secretary of Commerce Robert Mosbacher outlined the policy shift in a recent letter to Alfred Sikes, Federal Communications Commission chairman.

Currently, U.S. regulations require U.S. carriers and users to send almost all international switched traffic routed via satellite facilities over INTELSAT satellites.

By 1997, the departments of Commerce and State want to allow private satellite operators, such as Alpha Lyracom Space Communications, Inc., in Greenwich, Conn., to use their own satellites for carrying international switched traffic.

User benefits

Users could benefit from the policy change almost immediately. This is because the executive branch also wants private satellite operators to receive immediate permission to provide international private lines that send and receive traffic from the public net, a practice severely limited by current U.S. regulations.

Government officials said the policy change could vastly improve international satellite services by bringing new competition to the market. Nearly two-thirds of all international satellite service revenues come from international switched services. Private satellite operators need access to this market in order to become full-service competitors, observers argued.

"Five years from now, I think we're going to see what a powerful force of entrepreneurialism and imagination we've unleashed," said Steven Lett, deputy director of the State Department's Bureau of International Communications and Information Policy. Lett was part of a team of government officials who drafted the new satellite policy.

Alpha Lyracom is currently the only private satellite company that uses its own satellite to compete with INTELSAT. Satellite companies that use the Soviet Union's Intersputnik satellite system, including IDB Communications Group, Inc., would also be affected by the new policy.

Company instigates ruling

Alpha Lyracom instigated the policy change in July 1990 by asking the FCC to end all restrictions on the provision of international switched services by private satellite operators. Earlier this year, the executive branch and the FCC agreed to lessen the international switched service restriction somewhat by letting Alpha Lyracom use as many as 100 international 64K bit/sec circuits to carry global switched traffic.

(continued on page 26)

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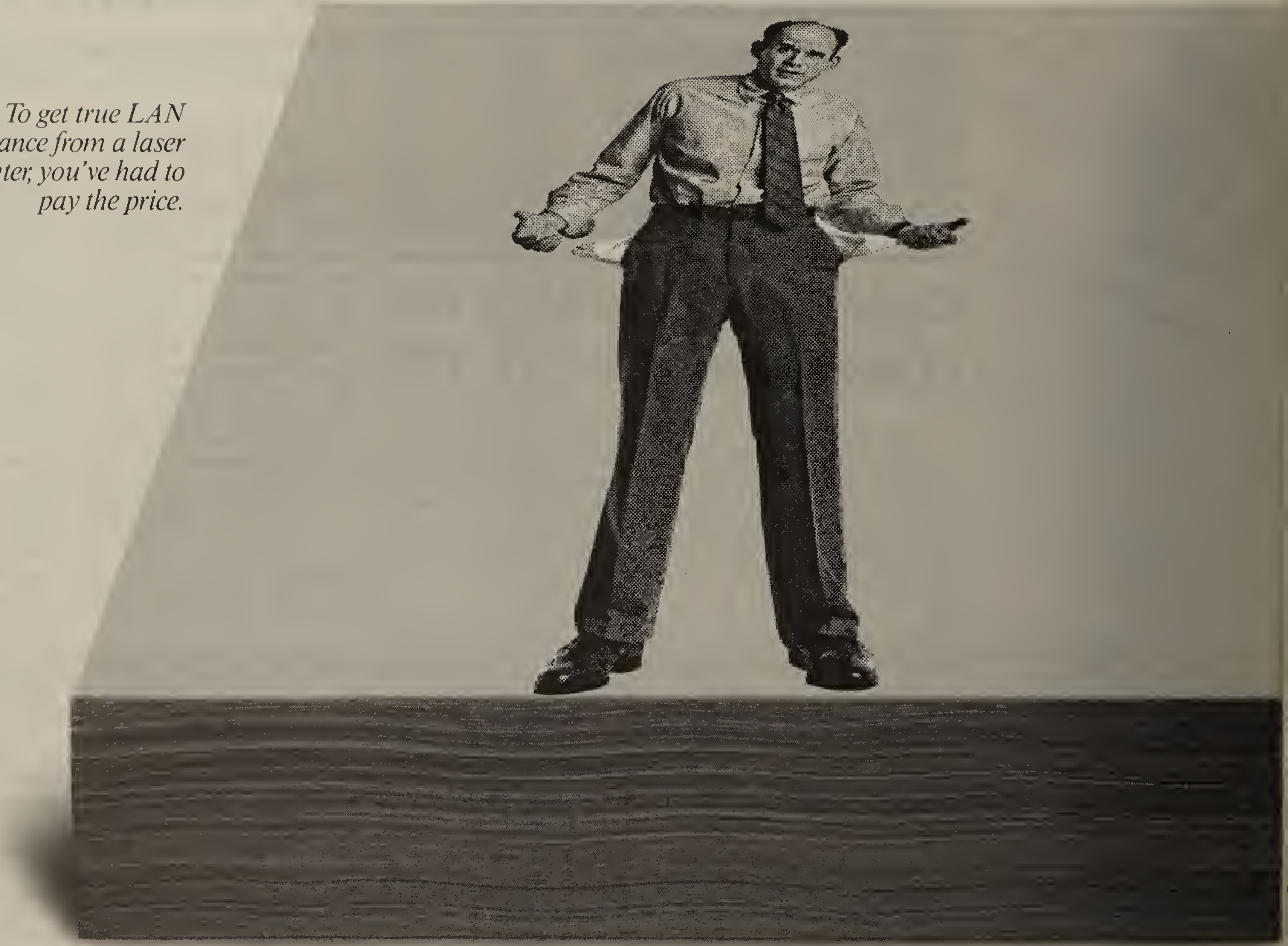

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PRINTERS. PAGES AHEAD

Cable & Wireless bails out of deal

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tiate the purchase price because TRT/FTC failed to meet conditions spelled out in the merger agreement Pacific Telecom and Cable & Wireless PLC signed in January.

Davenport said the conditions were related to regulatory approval of the merger by the Federal Communications Commission, as well as the financial performance of TRT/FTC. The acquisition faced tough regulatory scrutiny because the U.S. bans foreign companies from owning more than a third of any U.S. radio licenses, including the licenses TRT/FTC uses to provide international satellite services. Although foreign carriers can control U.S. radio licenses by divesting ownership of the licenses to U.S. subsidiaries, such arrangements can be difficult to piece together and can undergo lengthy examinations by the FCC.

In January, Cable & Wireless PLC officials said they expected the FCC to approve the acquisition within five months. By Nov. 29, when the acquisition was halted, the FCC had not ruled on the proposed deal.

The FCC also slaps the same dominant carrier regulations on foreign-owned carriers that it places on AT&T. Cable & Wireless PLC officials said they did not want to be regulated as a dominant carrier.

Davenport said the recession and uncertainty surrounding FCC approval of the acquisition hurt TRT/FTC financially. Pacific Telecom has acknowledged that TRT/FTC is not profitable.

But Davenport said Cable & Wireless Communications' strategic goal remains the same: to expand internationally. He said Cable & Wireless Communications will accomplish this by installing its own international facilities and considering other acquisitions. The firm could increase its international presence faster if the company acquires an international carrier. Davenport said Cable & Wireless Communications is examining at least one acquisition, which he declined to specify.

Pacific Telecom, in a statement, said it is still seeking strategic alliances for TRT/FTC. ◼

U.S. to relax rules on satellite services

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Rene Anselmo, Alpha Lyracom chairman and founder, said the company looks forward to the inception of full competition in 1997, although it hopes the U.S. government will allow full competition before then.

He added that the first iteration of the new policy, allowing Alpha Lyracom to provide international private lines that carry traffic to and from the public network, will help the company become more competitive in the international private net market.

Anselmo said INTELSAT's U.S. representative, the Communications Satellite Corp., has had a big advantage over Alpha Lyracom in the international private net market because COMSAT has faced no restrictions on the connection of international private lines to the public network.

According to Lett, even though the executive branch has decided to allow greater satellite competition, the FCC must still rule on the matter. But FCC approval is expected because it is standard practice for the commission to follow the Commerce and State departments' lead in setting international satellite policies.

Lett said the U.S. government must seek INTELSAT's permission to end restrictions on the transport of international switched services by private satellite operators. But even if INTELSAT objects, the U.S. could proceed anyway because the organization only plays an advisory role in the formation of the U.S. network policies, he explained. ◼

World News

continued from page 23

spokesman ("U.S.-led consortium gains control of Venezuelan net," *NW*, Nov. 25).

Two upstart international carriers from Japan, **International Digital Communications, Inc. (IDC)** and **International Telecom Japan, Inc. (ITJ)**, recently reported sharp revenue increases for the six months ended Sept. 30. IDC's revenue rose 103% from the same period last year, reaching 10.6 billion yen ($78.5 million U.S.), while ITJ's revenue rose 73% to 11.8 billion yen ($87.4 million U.S.).

IDC and ITJ were authorized by the Japanese government in 1989 to compete with Kokusai Denshin Denwa Company, Ltd. (KDD), Japan's previous monopoly international carrier. But both carriers' revenues are dwarfed by KDD, which reported revenue of 120 billion yen ($889 million U.S.) in the same six-month period. Also, IDC and ITJ are still losing money, although their losses are diminishing. IDC lost 3.5 billion yen ($25.9 million U.S.) in the period, 24% less than last year. ITJ reduced its losses 69% to 609 million yen ($4.5 million U.S.).

Several Austrian network users and vendors recently formed a user group, called **Working Group: Network Management**, to address problems with Austria's net infrastructure and interoperability and management issues for multivendor networks. Members include the financial institutions Creditanstalt-Bankverein, Spardat, Die Erste and Zentralsparkasse, as well as Unisys Corp. and the industrial groups OEMV and Voest Alpine. ◼

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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Chipcom offers hub for 10Base-T work groups

Chipcom Corp. recently unveiled an eight-port 10Base-T hub designed for small Ethernet work groups.

The **8-Port ONline 10BASE-T Workgroup Hub** enables users to create small Ethernet networks using either shielded or unshielded twisted-pair wiring, the company said.

The new stand-alone hub has eight RJ-45 ports that support twisted-pair connections for personal computers, workstations, file servers and other devices. It also has a BNC port for linking with thin-wire Ethernet devices and an attachment unit interface (AUI) port for thick-wire Ethernet connections.

Available by year end, the hub comes in two versions. The Model 5108H-TP has one AUI port and is priced at $595. The Model 5108H-TP1, which has both an AUI and a BNC connector, costs $695.

Chipcom Corp., Southborough Office Park, 188 Turnpike Road, Southborough, Mass. 01772; (508) 460-8900.

Granada software turns PS/2 into voice system

Granada Systems Design, Inc. recently unveiled software that enables the IBM Personal System/2 to offer several voice-messaging features.

TeleSwift/2 works with a variety of telephone key systems, including Centrex, private branch exchanges and hybrid key systems. It can handle 9,999 extensions using two-, three-, four- or five-digit extension types.

The software offers a voice-messaging feature that lets callers leave a message at any extension. Using access codes, messages can be reviewed from a push-button phone.

TeleSwift/2 can support from four to 24 ports and offers message capacity ranging from three to 32 hours.

Available now, TeleSwift/2 costs $2,950 for the first four ports and $1,950 for each additional four-port package.

Granada Systems Design, Inc., 245 Fifth Ave., New York, N.Y. 10016; (212) 686-6945.

HP airs MPE with POSIX compatibility

By Jim Duffy
Senior Editor

PALO ALTO, Calif. — Hewlett-Packard Co. recently said its proprietary MPE operating system is now compatible with the Portable Operating System Interface (POSIX) standard.

POSIX compliance enables the HP 3000 Series processors to support Unix applications side by side with MPE-based programs, said Glenn Osaka, HP's worldwide marketing manager for the HP 3000. Users can lower their cost of computing by deploying the HP 3000 as an applications server in a multivendor network.

"This is the crown jewel in a five-year program to open up the 3000 and integrate it into the enterprise," Osaka said. "POSIX marries MPE with Unix to create an application engine for the network environment."

But some users said they do not need POSIX support if they can already swap information between their MPE-based and Unix systems, as well as other operating platforms, through common protocols.

Lab Safety Supply, Inc., a distributor of laboratory equipment, uses HP's 3000 and Unix-based 9000 Series processors for recording and processing customer orders. The HP 3000 system runs order management applications, while the 9000 Series platform houses a marketing database.

> "POSIX marries MPE with Unix to create an application engine for the net environment."
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The systems reside on an Ethernet network at the company's headquarters in Janesville, Wis. To update its database, the 9000 accesses order processing information from the HP 3000 through Transmission Control Protocol/Internet Protocol.

"We have no immediate plans to utilize POSIX, but we'll keep it in mind for future development," said John Alexander, data center manager for the company.

Likewise, The Foxboro Co., a Foxborough, Mass., maker of process control and instrumentation systems, is in no hurry to implement the POSIX-compliant MPE.

Foxboro is currently downsizing IBM MVS mainframe applications to local-area networks in a client/server environment. Among the LAN servers are Unix processors and MPE systems. Those servers can exchange data using TCP/IP.

The only applications left on the IBM mainframe are corporate financials and human resources systems, including payroll and benefits. But Foxboro hopes to move those applications to the client/server environment, specifically to Unix servers, according to Peter Burrows, director of corporate information services for Foxboro.

> "Very few applications are written for the [POSIX] interface," Wendler said.
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"If POSIX can speed that [migration], great," he said.

Meanwhile, Burrows said he can't pinpoint any immediate benefits to adopting POSIX.

IBM last September said it plans to support POSIX in a future version of MVS. But application portability between POSIX implementations of proprietary operating systems — in this case MPE and MVS — will be very limited, said Steve Wendler, an analyst at Gartner Group, Inc. in Stamford, Conn.

If an application only uses POSIX Release 1003.1 calls, then application portability can be achieved between POSIX-compliant proprietary operating systems. "But very few applications are written for the [POSIX] interface," he said.

Osaka said HP's strategy is not to displace Unix hardware but to allow users to take advantage of POSIX's capabilities if it makes sense for them.

The POSIX-compliant version of MPE is dubbed MPE/iX and will be available in June.

In the meantime, HP is releasing a developer's tool kit to independent software vendors in order to spur development of MPE/iX applications. The tool kit includes POSIX Release 1003.1, documentation and Sun Microsystems, Inc.'s Network File System software.

The tool kit ranges in price from $10,000 to $50,000 and is available now. It is expected to be available on Sun workstations in the second half of 1992.

Motorola to unveil radio data modem

Breakthrough size reduction enables modem to be built into mobile computers, other devices.

By Joanne Cummings
Staff Writer

VANCOUVER — Motorola, Inc.'s Mobile Data Division this week will unveil a compact radio data modem that could spur availability of mobile computers and other business equipment for use in wireless data networks.

The new modem represents a design breakthrough since it is 73% smaller than any other radio modem on the market. Although not an end-user product, the modem's compact size will enable equipment makers to build it into a wide range of devices, such as laptop, pen-based and palm-sized computers.

It could also support an abundance of new applications for wireless network technology, ranging from outfitting salespeople with hand-held wireless terminals for entering orders or checking order status, to building the modem into vending machines that signal when they need to be restocked or repaired.

"With this [radio modem] technology embedded in a range of business machines, we're talking about providing the capability to put a field service technician at your doorstep before you know what's happening," said Don Parker, OEM director of the Mobile Data Division.

The new modem, the RPM405i, consists of a wallet-sized low-power consumption radio and attached logic board.

The radio portion consumes 3 watts of power and is designed to communicate data packets over wireless public data nets such as Ardis, a joint venture between Motorola and IBM in the U.S.

The modem's logic board is based on the MC56156 digital signal processor chip. This chip, designed by Motorola, performs the mobile communications signal processing and optimizes information throughput on radio data networks. The unit also comes with twice as much flash read-only memory as the company's previous radio modem, the RPM400i. This will enable users to download communications software as needs change.

The new modem also supports standard data communications protocols, such as the Hayes Microcomputer Products, Inc. AT command set, and can interface with DOS networks, easing the move to wireless communications for many users, Parker said.

The modem is scheduled for availability in the first quarter of 1992, and pricing has not yet been set.

In addition to the RPM405i, Motorola also recently unveiled software enabling users of wireless computers that employ the modem to interface with traditional DOS-based networks.

Called Waveguide, the software is a DOS application program interface tool that allows DOS applications to communicate with the modem transparently. The software, which runs on the mobile computers, accepts input from the radio frequency network and converts it into DOS file formats. This enables users to utilize their current DOS-based applications, without modification, over the radio network, according to Glen Brownlee, vice-president and general manager of the Mobile Data Division.

Current applications

Because the modem is so small, it offers manufacturers the opportunity to use it in a variety of devices, Brownlee said. Its size "leaves the OEM manufacturer more room to enhance functionality in other areas," he added.

Two manufacturers have already decided to incorporate the RPM405i in their next generation of products. NCR Corp., for instance, said it will use the modem in its recently announced NCR System 3125 computer, a pen-based device designed specifically for mobile users.

Another announced user is PSION PLC, which plans to incorporate the modem into its palm-sized field service terminal. Because the modem is so small, PSION is able to offer several advances in its terminal, including the ability to attach peripheral devices, such as a bar code reader or a printer.

Future applications

But there are a variety of other applications for the modem, Brownlee said. For example, he envisions the modem eventually being built into devices such as copy machines, enabling manufacturers to poll the devices for faults and dispatch repair teams before the customer is aware of a problem. It could also be used to poll a vending machine to find out if it needs attention.

* The Bell Atlantic family of companies includes New Jersey Bell, Bell of Pennsylvania, Diamond State Telephone, the C&P Telephone companies and other communications and information management companies. †Long-distance service

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OPINIONS

INFORMATION SERVICES

BY JAMES JOHNSTON

The RBHCs may have nothing new to offer

The regional Bell holding companies may still be celebrating the recent court victory that allow them to provide information services, but they're now faced with the difficult task of deciding which information services to offer. In my opinion, nothing novel is likely to emerge in the near future. The Baby Bells will probably move cautiously, and they may move by acquisition rather than innovation.

The RBHCs are well positioned to offer two services: electronic yellow pages, which are simply computer-accessible versions of the yellow pages that telephone companies publish, and audiotex, which uses push-button phones to retrieve audio information such as weather, news and sports updates. Since the RBHCs already own the yellow pages data, they just need to work out how to provide subscribers access to it. Unfortunately, judging from the experience of third-party providers of electronic yellow pages, Americans are not eager to use personal computers just to look up phone numbers.

> Americans are not eager to use personal computers just to look up phone numbers.
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A host of third-party audiotex services are available today. Because the RBHCs have always been allowed to offer audio time and weather information on a public service basis, they have experience with audiotex technology. They just need to find sources of information. Audiotex should be a viable service for the RBHCs, but they aren't going to get rich from it.

The demand for other local information retrieval services — such as classified ads, real estate listings and local government databases — is also questionable. No third party has yet been able to market such a local information service successfully.

The RBHCs might try marketing national on-line services, similar to the Dow Jones News/Retrieval service and LEXIS/NEXIS. Demand for these is good, but the RBHCs may have to buy an existing service provider or form joint ventures with companies that have on-line databases to sell. Also, access to a national on-line service requires a long-distance call, which RBHCs are barred from selling. This may limit possible RBHC national offerings or set off more legal battles.

A fourth service the RBHCs may be interested in is cable television. So far, the RBHCs have kept out of CATV not only because it was an information service, but also because the 1984 Cable Act bars telephone companies from owning cable systems in their service areas. The RBHCs are trying to change this law to clear the way for their entry. Like phone service, CATV generates large, stable revenue. But since most of the cable markets are already wired, if the RBHCs want in, they would have to purchase some cable companies. Whether they can do this and still make money remains to be seen.

I believe the ultimate RBHC fantasy would be to provide each home with full-motion, color video phone service, multimedia on-line databases and entertainment television. Except for the video phone call, the RBHCs would be providing and making money from much of the information going through their net, which they hope will be based on fiber-optic cable.

Of course, nothing ever seems to happen as predicted, and RBHC entry into the information services business is no exception. Once the celebrations are over and the RBHCs try coming up with money-making information services, users may find that the Baby Bells have nothing new to offer. ◪

Johnston is a Washington, D.C-based lawyer specializing in communications issues.

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EDITORIAL

Is E-mail a threat? Don't believe it.

The Boston Sunday Globe recently ran a damning column sure to generate concern, if not outright fear, about electronic mail among executives.

The piece echoes shopworn concerns about technology but misses the point about messaging and the potential business opportunities it opens for firms.

In its Economic Principals column, the paper expresses a Luddite-like mentality toward messaging, suggesting that companies ought to hobble E-mail systems or scrap them outright. Their rationale?

Among other things, E-mail:

- Wastes a lot of time.
- Shatters concentration.
- Creates factions within organizations.
- Allows companies to be "dominated by personalities who prefer behind-the-scenes communications to a straightforward exchange of views."

The column argues that, thanks to E-mail, employees will lose the ability to exchange information openly and frankly in a face-to-face setting.

While the piece raises some interesting concerns about the sociological impact of messaging, it fails to recognize the profound impact that E-mail can have on organizational dynamics and productivity.

Sure, E-mail can be annoying and misused by disgruntled or unproductive employees. But, as many companies can attest, E-mail can make it easier for workers across an organization to cooperate on projects, hastening design and development and getting products to market faster. It can aid scientific research and advance technology, a la the Internet.

E-mail can speed decision making, cut through red tape to improve customer service and make a company more responsive to the marketplace.

Oddly enough, the column acknowledges that the "best companies are those with the fewest institutional barriers to communication." That's precisely the benefit offered by E-mail, which can cut through the sometimes artificial, hierarchical barriers that exist between employees, reduce the need for time-consuming and usually unproductive meetings, and foster a greater sense of urgency and shared mission among employees ("Using E-mail to encourage candor and spontaneity," *NW*, Dec. 2).

To carry *The Sunday Globe's* logic to an extreme, one could argue for scrapping our telephones. They can be a damn nuisance and be misused.

The reality is that E-mail, even with its potential faults, is a highly valuable information-sharing tool that smart companies would no sooner be without than their phones. ◪

OPINIONS

MACROSCOPE

BY JAMES KOBIELUS

Users should act now to clean up wiring mess

Communications managers have only themselves to blame for the sorry state of their inside wiring. For far too long, they have delegated responsibility for wiring design, installation and management to outside parties — typically, to their telephone company, customer premises equipment vendor and mainframe supplier.

As a result, companies have acquired overlapping, vendor-specific communications wiring schemes that are a burden to maintain and troubleshoot.

Cleaning up the inside wiring mess should be the top housekeeping chore for most communications managers. Cable installers spend too much time searching for and identifying existing wire pairs — a preventable waste of valuable time.

The inside wiring cleanup operation should consist of three stages, with the first involving documentation.

Communications managers must maintain an up-to-date inventory and configuration database of all horizontal and vertical wiring plans, main and intermediate distribution frames, as well as voice and data communications equipment rooms and networked user workstations.

Maintaining accurate documentation requires tight discipline and controls in the following areas of network operations:

- **Centralized installation management and oversight.** Centralizing installation management within each building or campus ensures that, when necessary, at least one person will know which carrier, vendor or staff technician is pulling which cable or reconfiguring which cross-connect on which date.

The wiring installation manager must take responsibility for enforcing wiring standards and minimizing work-related service disruptions.

- **Automated record keeping.** Communications managers must integrate automated cable management systems into their work order and trouble ticket processes. Such automated software should maintain a complete database of phone numbers, cable paths, cross-connect points and port assignments, as well as jack and workstation configurations.

> Effective wire management is impossible without good labeling.
>
> ▲▲▲

Operations coordinators should be able to use the software for specifying to installers precisely where and how cable pairs are to be connected and for producing detailed wiring diagrams to support technicians at the work site.

- **Work-site labeling with quality assurance.** It must be stressed to technicians that work orders are not complete until all affected wiring system components — jacks, cables, conduits, cross-connects and ports — have been labeled clearly and completely.

Effective wire management is impossible without good labeling. Therefore, quality assurance personnel should inspect all technical work to make sure that labeling requirements have been met.

The second stage in cleaning up the wiring mess is to establish companywide technical standards that support all current and anticipated applications. Standards must also provide flexibility for future expansions, moves, adds and changes — especially for the implementation of a multivendor technical environment.

Communications managers must define clear standards for each element of a structured wiring plan, such as workstation outlets, horizontal and backbone cable runs, wiring closets, equipment rooms and building entrance facilities for carrier circuits.

Structured wiring plans make it possible — at least in theory — for companies to upgrade or reconfigure components without seriously affecting other elements of the wiring scheme.

From a corporatewide perspective, wiring standards enable companies to obtain volume discounts and focus limited financial and staff resources on a more manageable range of connectivity options.

By isolating specific, upgradable subsystems, structured wiring plans aid network managers in the final cleanup stage: identifying wiring facilities that can be streamlined, integrated and eliminated without compromising service levels.

For example, bulky backbone cables are prime candidates for conversion to fiber-optic strands because of bandwidth requirements and conduit space limitations. Data closets or equipment rooms should be considered for upgrading to smart wiring concentrators due to the advantages of managing Ethernet, token-ring, IBM 3270, asynchronous, fiber and other connections through a single star-wired hub.

Wired connections are certainly here to stay. Effective cable and wire management will remain the centerpiece of sound network management. In order to manage the growing variety of technologies and services competing for access to inside wiring infrastructure, communications managers must take this responsibility seriously.

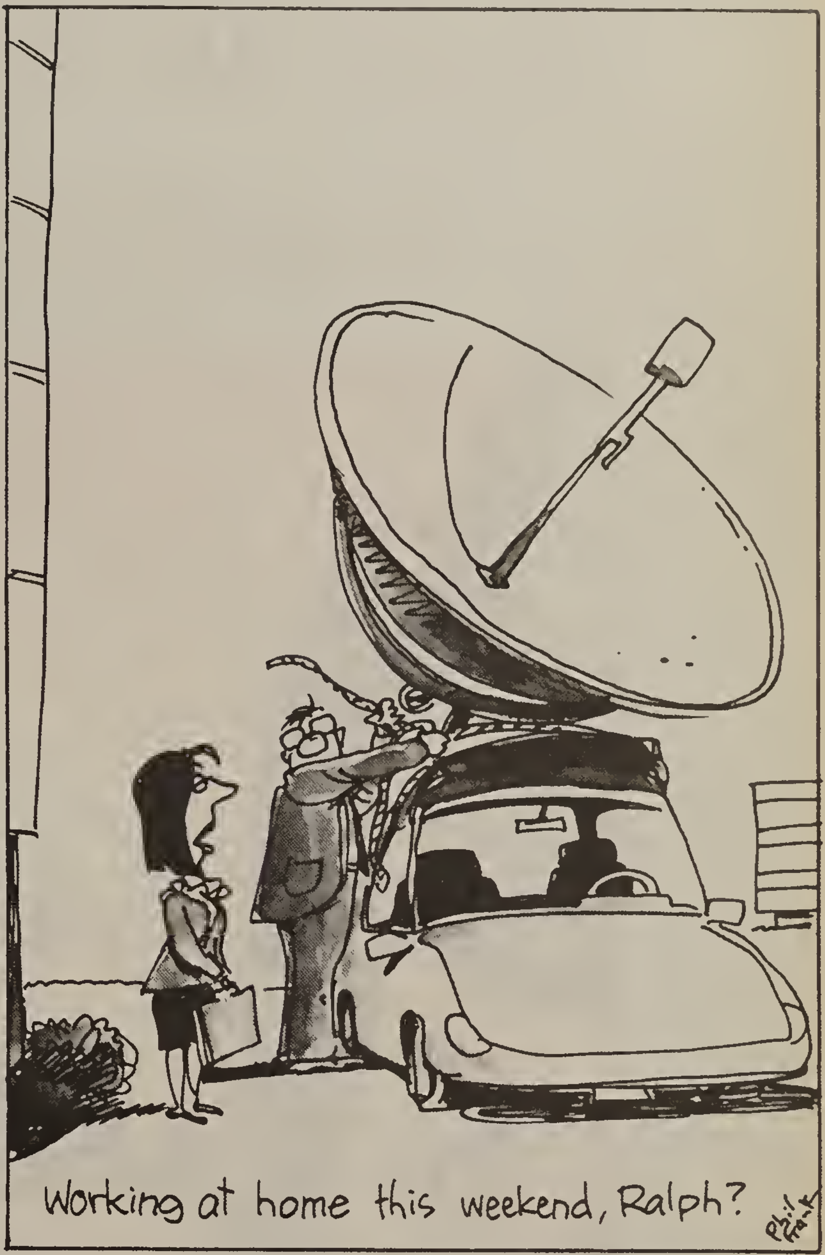
Kobielus, a contributing editor to Network World, *is a telecommunications analyst with Fairfax, Va.-based Network Management, Inc., one of the largest local- and wide-area network systems integrators in the U.S.*

LIKE ALLIGATORS IN A SWAMP, unforeseen problems can really put the bite on a communications operation. Many managers find themselves wrestling with these networking reptiles every day.

If you've survived an "alligator attack," share it with our readers by calling Susan Collins, associate features editor, at (508) 820-7413 or fax your idea to us at (508) 820-3467. Alligators should be 1,200 words in length and submitted either on disk or via modem.

TELETOONS

BY FRANK AND TROISE



Working at home this weekend, Ralph?

LETTERS

Matchless reporting

As an MIS executive, I found your pair of Integrated Services Digital Network Buyer's Guides ("The ISDN conundrum: Is it already too late?," *NW,* Nov. 11 and "ISDN equipment boom gives users more options," *NW,* Nov. 18) to be the most complete discussion of the issues confronting ISDN that I have seen to date.

The vendor tables that ran with both articles were quite comprehensive and provided readers with important product and service features. They also provided the capability information that readers need to help upper management understand which vendors offer compatible products that use ISDN's capabilities.

You have provided users with matchless insight into a complex technology offering. The *Network World* ISDN services Buyer's Guide and the ISDN customer premises equipment Buyer's Guide give readers substantial information to aid them when considering ISDN's benefits.

The customer premises equipment vendors appear to have risen to the challenge of meeting users' ISDN needs, but have the regional Bell holding companies? Not yet, I venture to say. It appears that responsibility for ISDN's future success falls squarely in the lap of the RBHCs.

Don Murphy
Vice-president
Cigna Corp.
Philadelphia

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FEATURES

DECnet Update

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DEC seeks advantage through three-towered approach

With DECnet Phase V scrapped, DEC fills in details of its new Advantage-Networks

CONTINUED FROM PAGE 1

sion Control Protocol/Internet Protocol and emerging international OSI standards.

And so, after years of drilling into users that DECnet Phase V would be a pure OSI implementation, DEC was forced to create a new name, one that showed DEC's architecture was no longer intended to be purely OSI. DEC came up with the term Advantage-Networks and said it would include DECnet Phase IV, TCP/IP and OSI — all of which are described as protocol towers.

A protocol tower is a set of protocols that span the seven-layer OSI reference model. Unlike protocol stacks that consist of protocols from a specific suite such as TCP/IP or OSI, protocol towers can consist of protocols from more than one suite. For example, a protocol tower enables an OSI application to run over a TCP/IP network. With protocol towers, applications attempting to communicate can utilize DEC's Distributed Naming Service (DNS) to determine which protocols the two applications support. This process defines a multilayer path called a tower set, which both applications must use when communicating.

With OSI as one of its three towers, DEC retains the ability to build OSI into its networking future. But the company's new focus is clearly on open networks that enable multivendor devices to communicate easily.

There was a reason for DEC retrenching on its OSI promise. With users of DECnet Phase IV beginning to bump up against its technical limits — especially in network addressing — and with OSI slow to catch on in the U.S., DEC was forced to embrace the protocol many of its users were adopting: TCP/IP.

"DEC has openly endorsed the idea of multivendor networks and has acknowledged the role of TCP/IP," says Leslie Maltz, director of computer and communications resources at the Stevens Institute of Technology in Hoboken, N.J. "It's something we pushed very hard for." Maltz is also the chairwoman of the Digital Equipment Corp. Users Society's technology directions committee.

DEC not only announced the Advantage-Networks term this year, it began fleshing out its new networking strategy with products and announced how it intends to fill in the rest of the pieces of this new networking puzzle.

On the product front, DEC began to firm up its three-protocol approach by announcing multiprotocol routers, releasing some OSI software and detailing plans for improved TCP/IP support.

The company also began an attempt to recast DECnet Phase IV as a less proprietary protocol by licensing the software to other vendors for use on Unix systems.

"I don't think overall there is a trend to any one protocol," said Audrey Augun, DEC's open networks software marketing manager. "There are some users who will stay with TCP/IP for the long term. Most of the users we see run more than one major network protocol."

The key component of Advantage-Networks to arrive this year is DEC-developed multiprotocol routers that enable users to build integrated backbone networks that support DECnet Phase IV, TCP/IP and OSI. Without DEC-developed multiprotocol routers, DEC customers would be forced to rely on third-party relationships to build multiprotocol networks.

All of DEC's multiprotocol routers use the Integrated Intermediate System to Intermediate System protocol to route OSI, TCP/IP and DECnet Phase IV traffic.

DEC retrofitted its DECnet-only DECrouter line to support TCP/IP and OSI and released it as the WANrouter line. DEC also unveiled a high-end Reduced Instruction Set Computer-based internetworking device called the Network Integration Server (NIS) 500/600. Scheduled to ship next month, the NIS 500/600 combines multiprotocol routing, bridging and X.25 packet switching. The device will initially support Ethernet and will later support token ring, FDDI and frame relay.

Now that it has the tools to build a multiprotocol backbone network, DEC needs to deliver the protocol software. While the company has introduced some of the necessary software, the availability and packaging of the protocol suites vary between the three towers.

The key missing pieces are full TCP/IP services and native OSI support for the VMS operating system. All three towers are available for the Ultrix operating system.

DEC's installed base is still largely VMS computers that run DECnet Phase IV, which comes bundled with the VMS license. Ultrix, DEC's version of Unix, comes with TCP/IP, as do most other vendors' flavor of Unix.

DEC intends to deliver TCP/IP Services for VMS sometime next year. The software will include application layer services such as Simple Mail Transfer Protocol (SMTP), Sun Microsystems, Inc.'s Network File System and DEC's TCP/IP-based remote procedure call technology. The services will be available separately, Augun says.

VMS systems currently can run a basic TCP/IP protocol tower called the VMS-Ultrix Connection. But OSI support for VMS remains the sticking point.

At DECworld '87, DEC promised native OSI support for all its computers. At NetWorld 89, the company said native OSI products would ship in the fall of 1990. This year, however, the

(continued on page 34)

Smalley is a Boston-based free-lance writer.

(continued from page 33)

company could only deliver OSI products for Ultrix. The long-awaited DECnet/OSI for VMS software remains in the category of announced intentions and is now expected to be available sometime next year (see Table 1, page 36).

This year's release of DECnet/OSI for Ultrix implements both OSI and DECnet Phase IV protocols on Ultrix computers. But the software is not bundled with the operating system and must be purchased separately.

> DEC's attempts to recast the image of DECnet go hand in hand with its efforts to remake VMS as an open operating system.
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DEC did manage to deliver some level of OSI end-node support for VMS through the OSI Extension for DECnet VAX. The extension is a seven-layer OSI protocol tower for VMS that is layered on top of DECnet Phase IV. The software, which is bundled with VMS, allows applications written for VMS to send data over an OSI network.

The lack of native OSI support for VMS has been a cause for concern, analysts say, because DEC's installed base is still largely VMS-oriented and DEC this year began pushing VMS as an open operating system.

In addition to adding support for OSI and TCP/IP to its proprietary VMS operating system, DEC introduced a licensing program that brings its proprietary DECnet Phase IV protocol to open Unix operating systems.

In June, Bell Atlantic Corp. signed a first-of-its-kind agreement with DEC that enables Bell Atlantic to license DECnet Phase IV for Unix to other companies. Multivendor support for DECnet Phase IV has led DEC to claim that the protocol is becoming more open.

DEC's attempts to recast the image of DECnet go hand in hand with the company's efforts to remake VMS as an open operating system. However, DEC's claims about the openness of VMS rest largely on its intention to support the Portable Operating System Interface (POSIX) application interface.

Redeeming towers

Another key aspect of Advantage-Networks is interoperability between the three protocol towers, which is accomplished through a variety of interfaces and gateways (see Figure 1, page 36).

These links, to a certain degree, allow DEC to point to the umbrella of Advantage-Networks and declare it open. At the same time, the links enable DEC to sidestep charges that its installed base is mostly proprietary DECnet, that it was late to embrace TCP/IP and that it has failed to deliver on its OSI promise.

For example, in the area of file transfer, DEC this year released a TCP/IP File Transfer Protocol (FTP)-to-OSI File Transfer, Access and Management (FTAM) gateway for its Ultrix systems. The gateway enables an FTP application running on one computer to send a file over either TCP/IP or OSI to an FTAM application running on another computer. DEC already offers a DECnet Data Access Protocol-to-FTAM gateway for VMS systems that enables OSI and DECnet Phase IV applications to exchange files.

Next year, DEC is planning to release other application-layer gateways. One will enable users of OSI X.400- and TCP/IP SMTP-based electronic mail systems to exchange messages. Another gateway will enable devices using TCP/IP's Telnet virtual terminal protocol to access host-based OSI applications and devices using OSI's Virtual Terminal Protocol to access host-based TCP/IP applications.

DEC supports a transport-layer connection between TCP/IP and OSI called the X/Open Transport Interface (XTI), which enables users to write Unix applications that can utilize TCP/IP and OSI transport-layer protocols.

DEC also plans to support an emerging mechanism, the Internet Advisory Board's Request For Comment (RFC) 1006, which will allow existing OSI applications to run on top of TCP/IP's transport layer, Augun says.

Both XTI and RFC 1006 provide application portability across computers running different network protocol towers and aid users in migrating from one protocol to another, Augun says.

In addition to the three protocol towers and the various connections and gateways between them, DEC bolstered its network offerings in the areas of microcomputer connectivity, network management, distributed computing and IBM connectivity.

Among the introductions, the company boosted support for token ring, added to the list of entities that can be managed from its network management platform and boosted the connectivity between Ultrix computers and IBM's Systems Network Architecture.

DEC has not been successful in providing some of these services. For example, its microcomputer connectivity strategy has been less than exemplary.

"Where [DEC] has really fallen down is connecting PCs to its environment," says Howard Niden, director of management consulting services for Price Waterhouse. "The desktop is most definitely a place where they have to be a major player. It's potentially a really big problem for them."

Using Pathworks

The heart of DEC's effort to integrate PCs into DECnet is Pathworks, a version of Microsoft Corp.'s LAN Manager that runs on microcomputer clients and servers running VMS and Ultrix. DEC introduced this version of Pathworks in 1990.

This year, DEC added support for token ring to the Pathworks software by signing an agreement with Proteon, Inc. to resell that company's token-ring hardware.

DEC also announced an internally developed port card for its Fiber Distributed Data Interface concentrator and one for its desktop workstations that enables FDDI to run over shielded twisted-pair cabling between the desktop and the concentrator.

DEC formed closer ties with Microsoft last month by tightly integrating Microsoft Windows 3.0 into the Pathworks environment. This will enable client workstations running Windows 3.0 to access servers running Pathworks, which provide access to VAXes and other resources on a DECnet network.

DEC also turned to another vendor this year to boost electronic messaging in the local-area network environment. DEC signed a reseller agreement with Retix to sell Retix's OpenServer X.400 software for microcomputer LANs. The software provides a gateway between popular E-mail packages on PC LANs and DEC's X.400-based Mailbus messaging system.

One criticism of DEC's microcomputer LAN strategy is that many networked microcomputers already run some networking software — in most cases, Novell, Inc.'s NetWare — and some users resent having to load additional networking software on their microcomputers in order to participate in the DEC environment.

Although it has not been selling very well, Pathworks is not functionally inferior to other LAN operating systems such as NetWare, Niden says. However, DEC does need to provide a solid programming environment for Pathworks so users and third-party software developers can more easily build Pathworks applications, he adds.

DEC has been somewhat more successful at providing network management tools. DEC's Enterprise Management Architecture (EMA) is a sweeping set of guidelines describing how DEC intends to manage both networks and the systems attached to them.

DEC's flagship EMA product, the DEC Management Control Center (DECmcc) Director, supports the DECnet Network Information Control and Exchange protocol, the TCP/IP Simple Network Management Protocol (SNMP) and the OSI Common Management Information Protocol.

DECmcc Director provides a sophisticated set of tools that follow the object-oriented model of separating the entities being managed from management functions.

The four pieces

DECmcc Director is divided into four components: the Management Information Repository, Access Modules, Functional Modules and Presentation Modules. The repository is a data base that tracks management information, including entity class and attributes.

> "Where [DEC] has really fallen down is connecting PCs to its environment," says Howard Niden of Price Waterhouse.
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Functional Modules are akin to applications that process management data collected from network elements, filter incoming alarms, enable users to prepare management reports as well as generate network topology maps, among other things.

Access Modules allow DECmcc Director to collect management data from a variety of network elements as well as control the operation of those elements.

Examples include DECnet Phase IV devices, TCP/IP networks, SNMP-based devices, T-1 circuits and third-party devices such as bridges. DEC has a program that helps third-party vendors build Access Modules for the DECmcc Director.

Third-party vendors that announced DECmcc Director Access Modules this year include Vitalink Communications Corp., with its bridge product line, and Applitek Corp., with its metropolitan-area network software. Over the last two years, other vendors have announced intentions to develop Access Modules. DEC also released Access and Functional Modules for managing its Ethernet and FDDI bridges and concentrators this year.

Despite the technical sophistication of DECmcc Director, DEC faces two stumbling blocks in implementing its network management strategy. DEC has long touted EMA but only began shipping products last year, which caused distrust and frustration on the part of some users.

"We're not putting all our bets on the EMA environment," said Philip DeMar, external network manager at the Fermi National Accelerator Laboratory in Batavia, Ill. "We're looking at other SNMP vendors."

Also, the industry is beginning to move toward standard network management platforms. In September, the Open Software Foundation, Inc. (OSF), an industry coalition in which DEC is a key member, released its choice for a standard management platform called the Distributed Management Environment (DME).

DEC submitted DECmcc Director to the DME technology selection committee, but DEC's technology was conspicuously absent from the final DME selection. Instead, the OSF chose Hewlett-Packard Co.'s OpenView as the core of the DME.

DEC has said it will support the OSF's DME in some fashion, but it is not known to what extent and when DEC will make DECmcc Director compliant with DME. This fact will weigh heavily on users' minds as they listen to DEC preach the open networks gospel.

Explaining how it intends to support DME will be vital to DEC since network management is emerging as a critical means of controlling large multivendor customer accounts, according to analysts. And competition in the

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multivendor network management market is heating up.

DEC was considerably more successful at helping shape the OSF's Distributed Computing Environment (DCE), which became available in September. The DCE provides a set of software that allows users to build the infrastructure for supporting distributed applications. DEC technology that went into the DCE includes the Distributed Timing Service (DTS), the Concert Multithread Architecture (CMA) and DNS.

DEC also collaborated with the Apollo Division of HP to expand on Apollo's Network Computing System remote procedure call technology, which is a core element of the OSF's DCE.

DTS synchronizes the clocks of all the computers on the network, while CMA facilitates parallel processing. DTS and CMA coordinate the processing of jobs on different computers around the network.

The most significant of DEC's distributed computing technologies is DNS, which distributes node name lists around the network. It consists of servers and clients, with the servers maintaining the name database.

DNS is similar to the TCP/IP Domain Name Service and the OSI X.500 directory service. X.500 is a superset of DNS, according to Iain Smith, DECnet VAX product manager at DEC. He is also responsible for tracking the ongoing developments in

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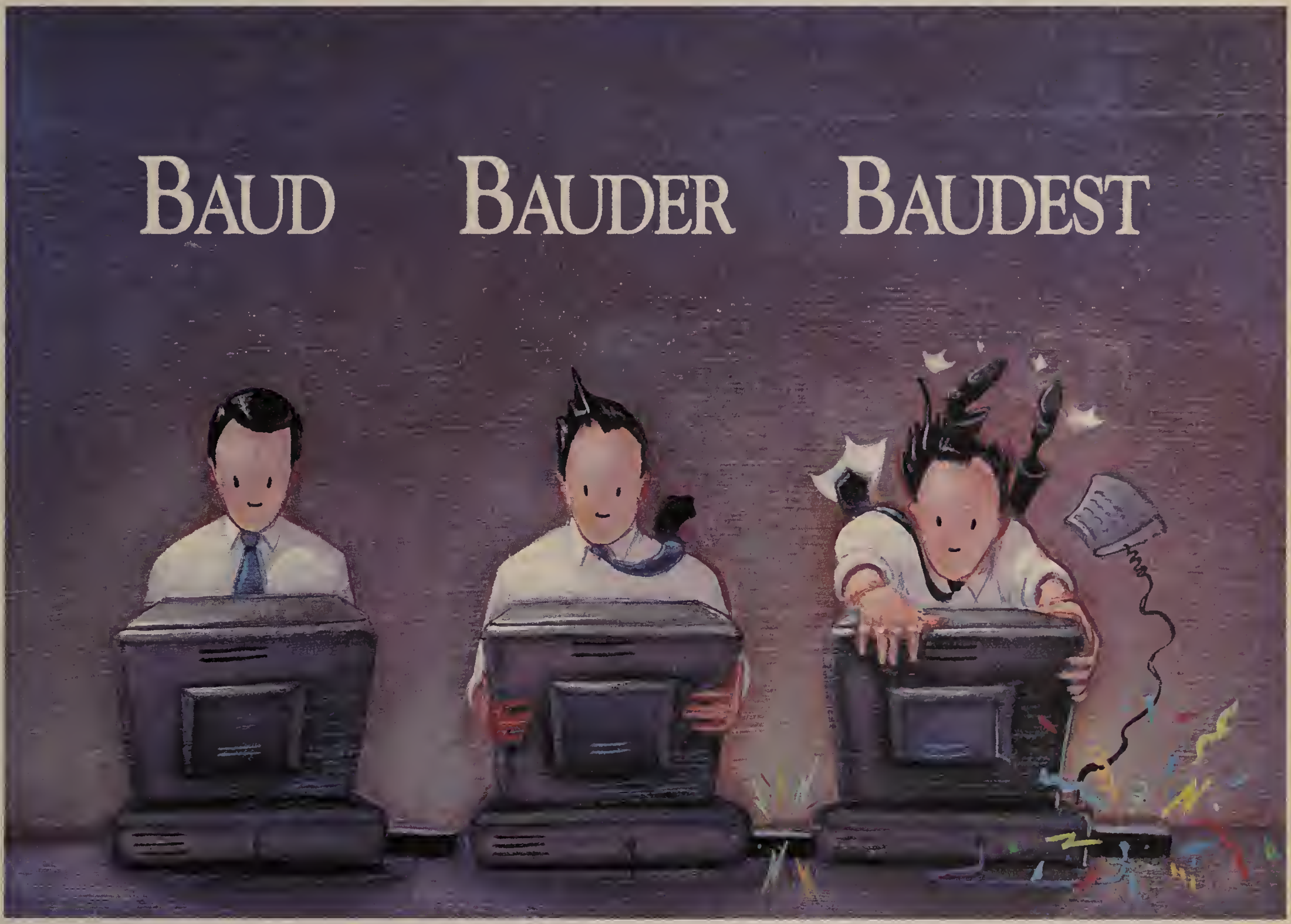

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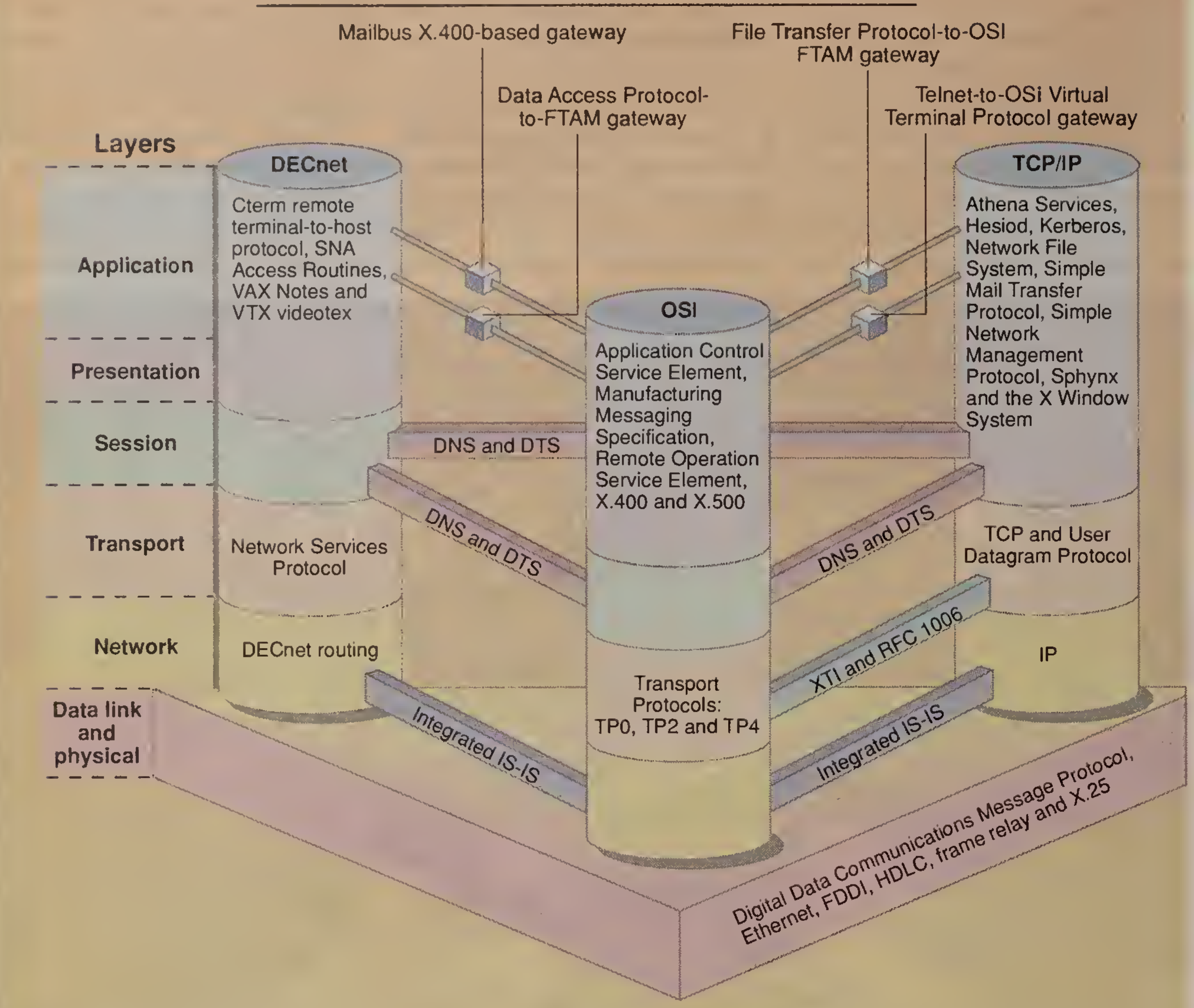
DEC's rearchitected network strategy

Figure 1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DNS and DTS
DNS and DTS
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XTI and RFC 1006
Integrated IS-IS
Integrated IS-IS
Digital Data Communications Message Protocol, Ethernet, FDDI, HDLC, frame relay and X.25

DNS = Distributed Naming Service
DTS = Distributed Timing Service
FTAM = File Transfer, Access and Management
Integrated IS-IS = Integrated Intermediate System to Intermediate System
RFC = Request For Comment
XTI = X/Open Transport Interface

DEC's Advantage-Networks strategy includes support for 3 protocol towers. DEC supplies programming interfaces that provide a link between towers, thus enabling OSI applications to use TCP/IP or DECnet Phase IV transport protocols, for example.

GRAPHIC BY SUSAN SLATER

SOURCE: DIGITAL EQUIPMENT CORP., MAYNARD, MASS.

DEC uses unique approach

continued from page 35

X.500. "DNS is really a stage in the adoption of X.500," he said, reiterating DEC's intention to move to X.500 when the protocol becomes more stable.

Directory services allow clients to request directory information residing on a server. DNS differs from X.500 in that it requires the requesting client to provide information such as a person's full name.

X.500 allows searching by the attributes of a network object, meaning that the search for the electronic mail address of another user can be based on as little information as the first or last name of the user.

DNS is designed for quick name lookup, while X.500 provides a broader service, Smith says.

Strengthening SNA links

While the focus of DEC's network strategy is to provide products that comply with existing and emerging open systems standards, it has not abandoned efforts to build tighter links to SNA.

For many years, DEC has offered IBM SNA connectivity for its VMS-based DECnet software.

In October, DEC expanded its SNA connectivity products to cover its Ultrix-based DECnet and TCP/IP software. DEC introduced a suite of Ultrix SNA services, including DECnet/SNA gateway, 3270 terminal and print emulation services, remote job entry emulation, an Advanced Program-to-Program Communications/LU 6.2 tool kit, a High Level Language Application Program Interface tool kit and a 3270 Data Stream Programming Interface.

The web of links that Advantage-Networks products can create is extensive, and DECnet users are satisfied with the overall direction DEC has indicated it is taking with its networking strategy. But a big complaint remains: DEC's inability to deliver key portions of the software.

"The TCP/IP Services for VMS is what we're anxiously waiting for, Stevens Institute of Technology's Maltz says. "We are currently running third-party TCP/IP products and [the VMS-Ultrix Connection]. We want to run only one flavor of TCP/IP, and it would be nice if it could come from DEC."

Some users with particularly large networks have run into the limitations of DECnet Phase IV and have an immediate need for Advantage-Networks products.

"We've strained and exceeded the bounds of good taste in DECnet," DeMar says. DECnet Phase IV does not scale well to a global network in terms of naming, addressing and routing capabilities, he says.

DEC has reacted, sometimes quickly and sometimes slowly, to the changing networking needs of its users and is headed in the right direction, according to industry observers. However, key pieces of DEC's networking strategy remain question marks, including the popularity of Pathworks, OSI support for VMS, and when it will issue products that make EMA conform to the OSF DME.

The timely resolution of these questions could give considerable substance to DEC's claim to leadership in open networking.

DEC chose the name Advantage-Networks presumably to imply the software gives its customers an advantage in building open networks.

But while the sum of the pieces of Advantage-Networks gives users the necessary tools to choose from, DEC must deliver those tools before users can build open networks.

And so, the question of whether DEC's users will indeed gain an advantage from Advantage-Networks currently hinges on promises and good intentions. ☐

Pieces of the Advantage-Networks puzzle

Table 1

Released

Product	Description
DECnet/OSI for Ultrix	Provides OSI network services for Ultrix-based systems
OSI Extensions for DECnet VAX	OSI protocol stack layered on DECnet Phase IV for the VMS operating system
OSI Application Developer's Toolkit	Helps developers build OSI applications
WANrouter 150/250	Multiprotocol router supporting OSI, TCP/IP and DECnet Phase IV
DEC Network Integration Server 500/600	Reduced Instruction Set Computer-based internetworking device
Pathworks 4.1	LAN Manager-based network operating system updated to support token ring
NDIS Driver Support for Pathworks	Makes Pathworks compatible with adapter boards supporting the Network Driver Interface Specification
Proteon, Inc.'s token-ring product line	Reseller agreement
Ultrix SNA Services	Provides SNA connectivity for Ultrix-based systems
DECmcc Management Station for Ultrix 1.1	SNMP network management platform on Ultrix workstation
DECmcc TCP/IP Access Module 1.1	SNMP network management software for VMS-based management platform
DECmcc Extended LAN Manager	DECmcc Director support for DEC FDDI products
Vitalink Communications Corp.'s DECmcc Director Access Module	DECmcc Director support for Vitalink bridges
Applitek Corp.'s LANcity DECmcc Access Module	DECmcc Director support for managing Applitek metropolitan-area networks

Key announced intentions

Product	Description
DECnet/OSI for VMS	Will provide OSI network services for VMS-based systems
TCP/IP Services for VMS	Will provide full TCP/IP support for VMS-based systems
DECagent 90	SNMP management module for DEC's work group-level products
MS-DOS Network Management Station	Network management platform based on DOS workstation

DEC this year announced a series of products in support of its Advantage-Networks strategy, though not all of the products are currently available.

DECmcc = DEC Management Control Center
SNMP = Simple Network Management Protocol

GRAPHIC BY SUSAN SLATER

SOURCE: DIGITAL EQUIPMENT CORP., MAYNARD, MASS.

3Com rolls out low-end hub

continued from page 17

A maximum of three LinkBuilder 10BT hubs can be connected to a single LinkBuilder 10BTi to form a single 24- to 48-port manageable hub.

Users can keep hub costs low by deploying a single LinkBuilder 10BTi intelligent hub as a network management hub and tying multiple LinkBuilder 10BT transparent hubs into it.

A configuration consisting of a LinkBuilder 10BTi attached to three LinkBuilder 10BTs to form a 48-port hub will cost $113 per port. Competitive offerings for a 48-port managed system would require the user to purchase either four stand-alone, manageable fixed-port hubs at an average cost of $180 per port or a chassis-based system for an average price of $245 per port, 3Com said.

The new hubs also include an integrated attachment unit interface port for connection, via a transceiver, to thick or thin coaxial, twisted-pair or fiber networks. Optional Single Port BNC and Fiber Modules are also available for direct connections to thin coaxial and fiber networks.

The LinkBuilder 10BT costs $1,095, or about $90 per port, and will be available next month.

The LinkBuilder 10BTi costs $1,995, or about $165 per port, and is expected to be available in the second quarter next year.

Optional features available next month include the Hub Expansion Cable, priced at $59; the Single Port BNC Module, priced at $149; and the Single Port Fiber Module, which has not yet been priced. ☐

Data Packets

continued from page 16

Clear To Send Electronics, Inc. recently unveiled V.35 and X.21 digital bridges for the high-speed synchronous market that are supposed to reduce the number of communications lines and modems required in a digital net.

The MD-V.35 bridge allows users to share data service unit/channel service units with up to four terminal controllers, thereby cutting equipment and line costs. The MD-V.35/X.21 supports synchronous transmissions and allows U.S. data communications systems to convert to the European X.21 packet standard.

The bridges, which are available now, support speeds up to 2.048M bit/sec. The MD-V.35 costs $995, and the MD-V.35/X.21 costs $1,495. ☐

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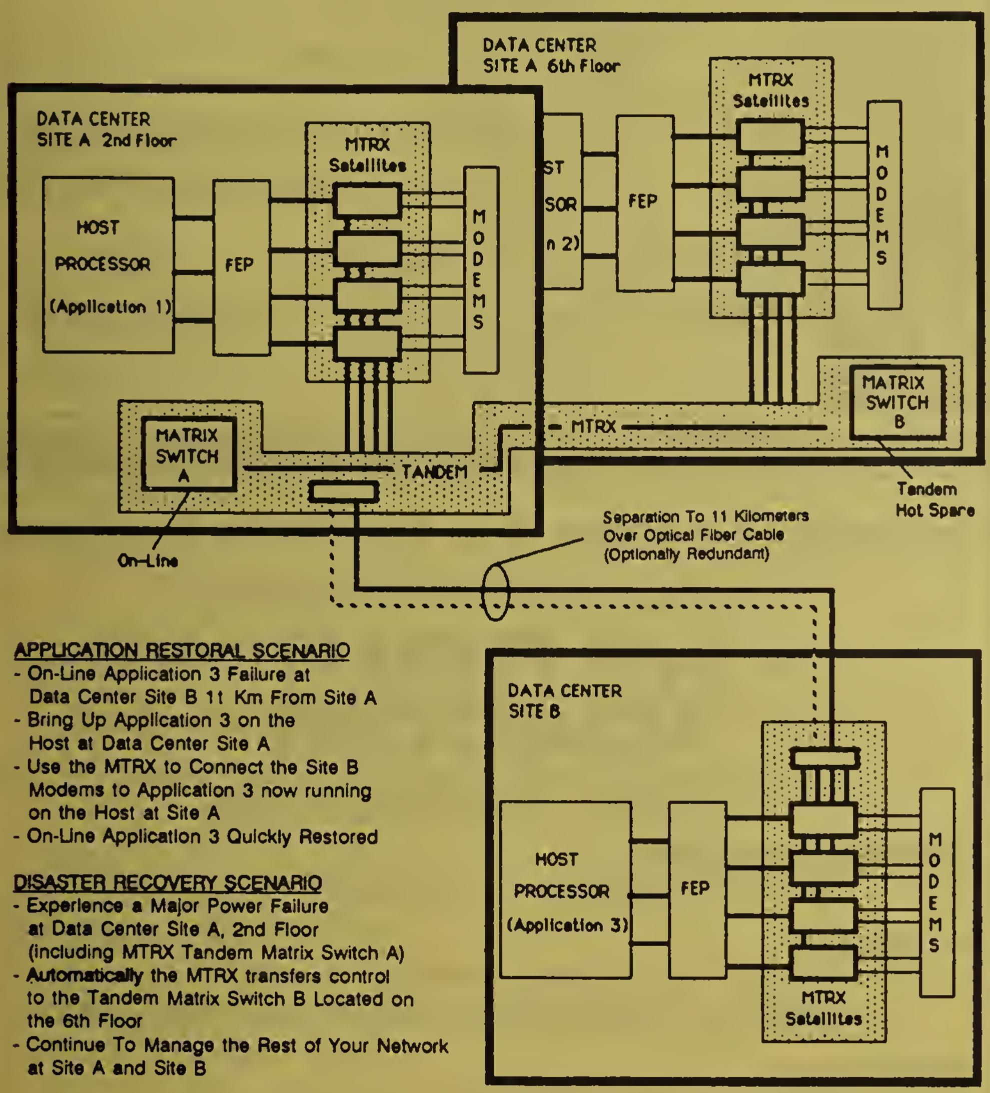

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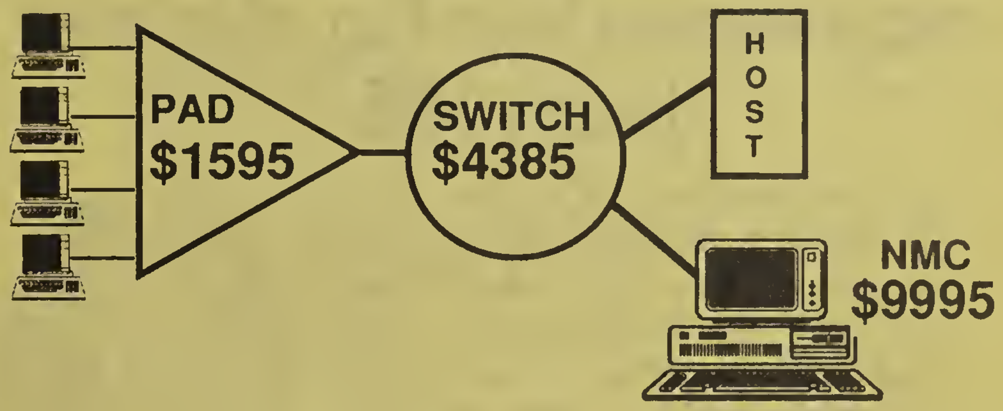

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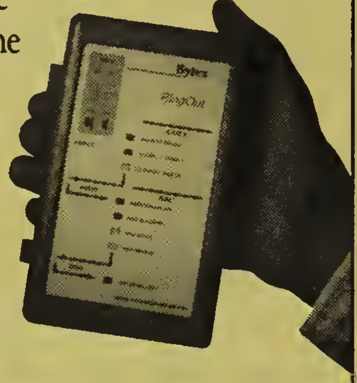

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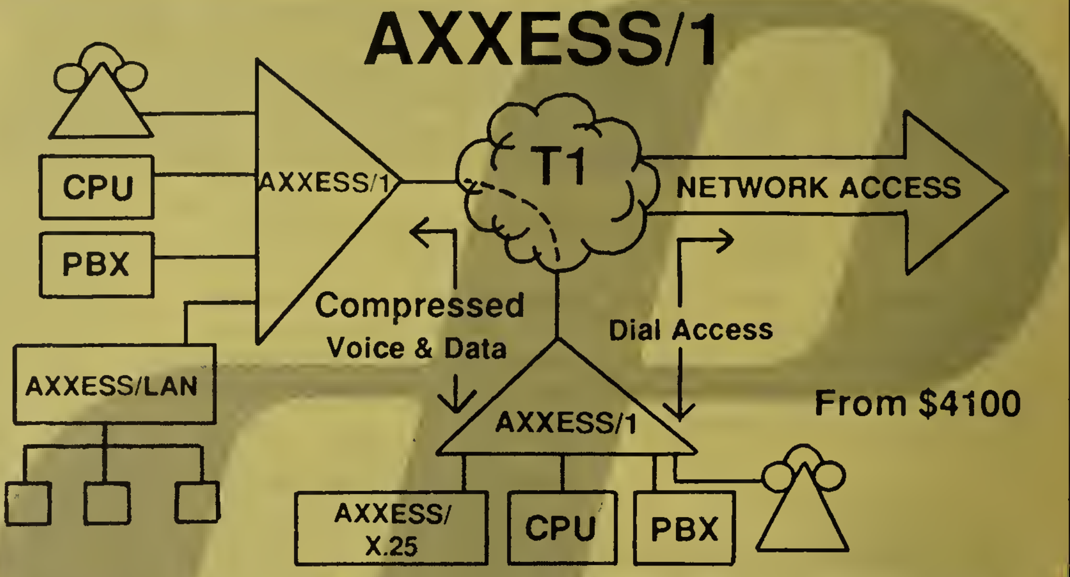

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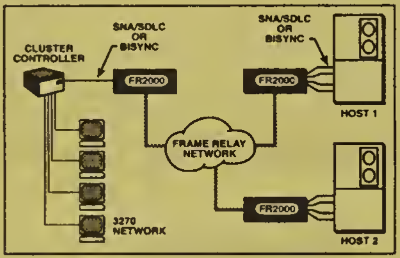

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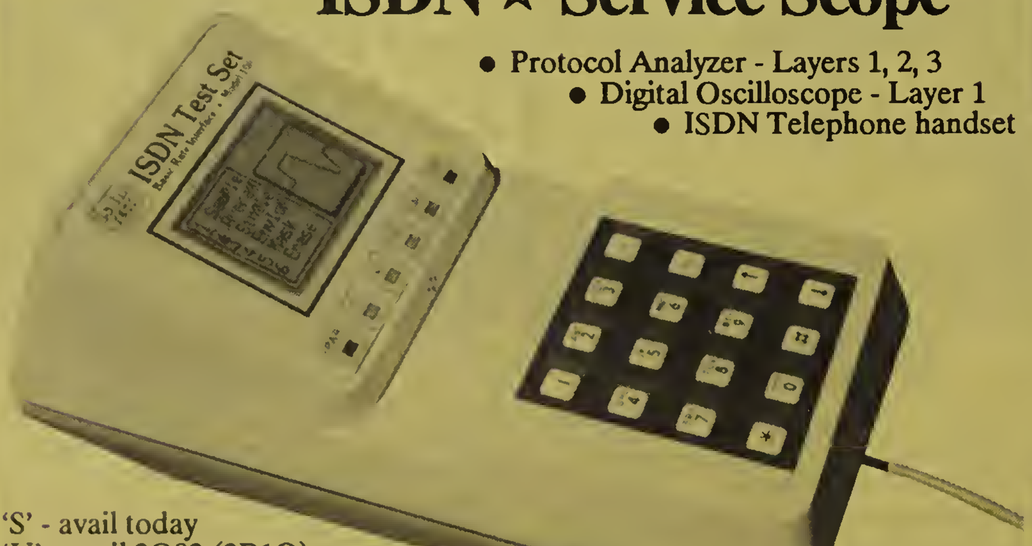

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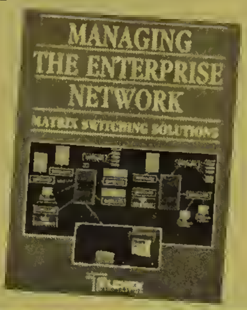

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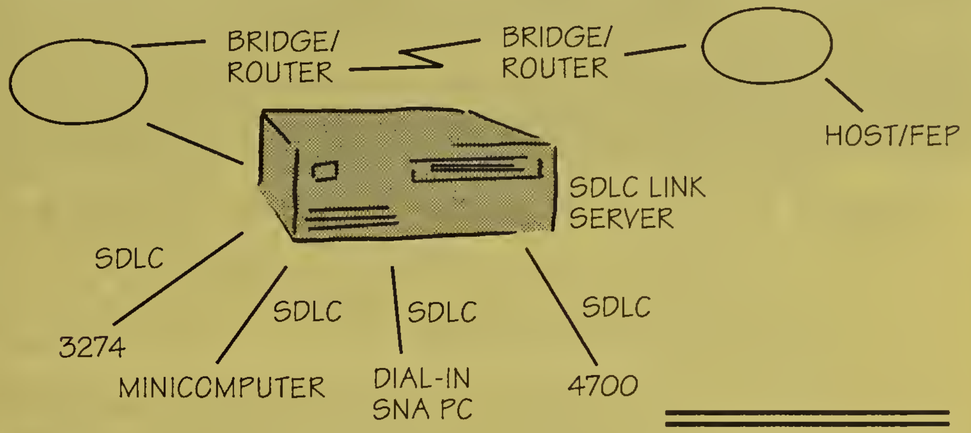

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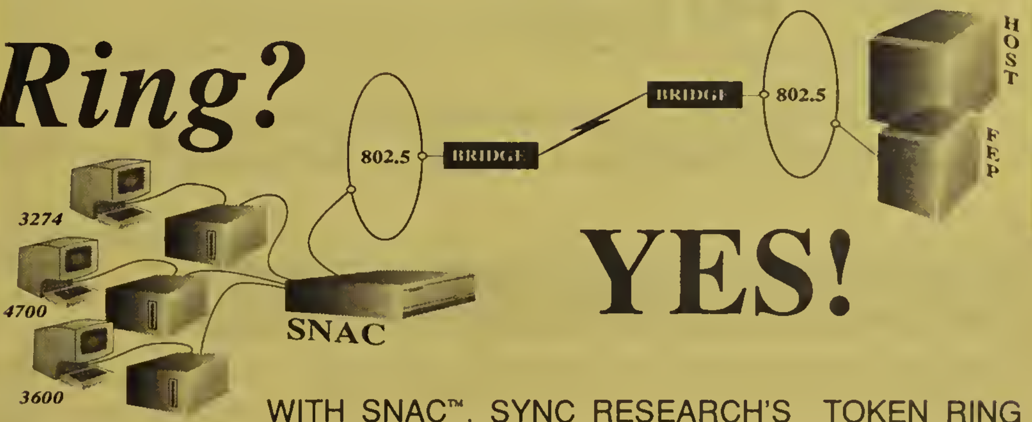

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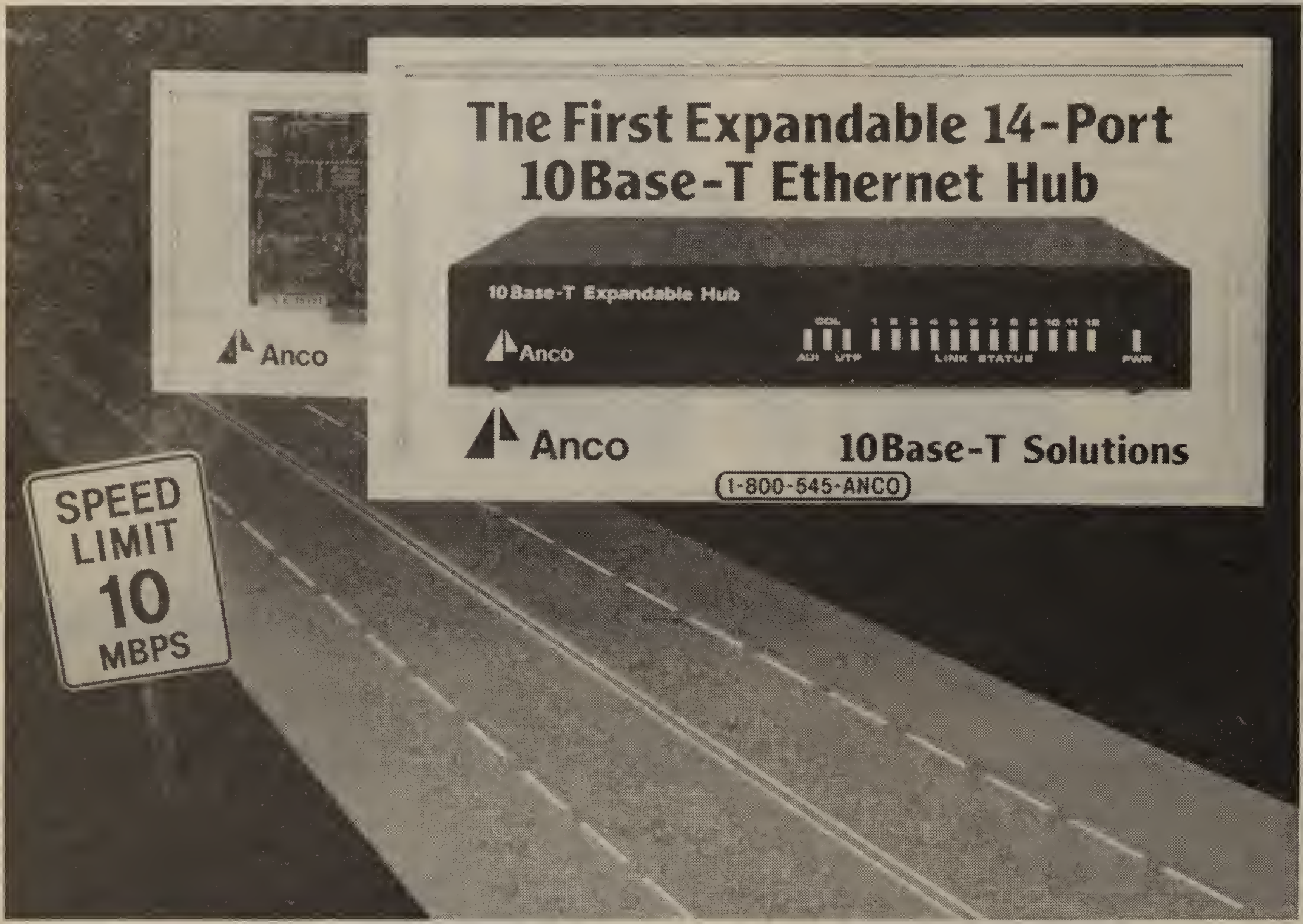

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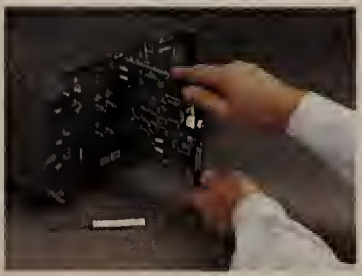

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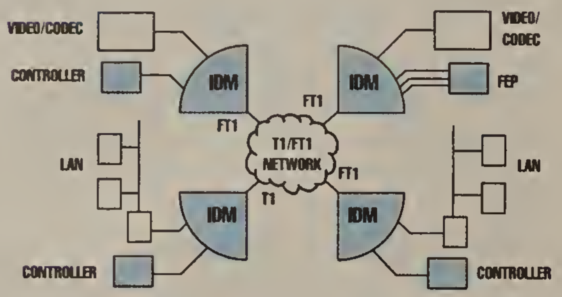

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New wave of LAN hubs

continued from page 1

market in the mid-1980s. First-generation hubs were simply multiport repeaters that supported a single type of LAN, such as Ethernet or token ring, and were basically designed to simplify LAN cabling.

Second-generation smart hubs featured network management and accommodated multiple LAN types. But since most of them feature a single bus, second-generation hubs have limited internetworking options.

In the past five months, at least four companies have announced third-generation hubs or plans for hubs designed to supplant or coexist with earlier devices.

Ungermann-Bass, Inc. introduced its Enterprise Hub last summer, 3Com Corp. unveiled plans for a third-generation hub in September, and Hughes LAN Systems, Inc. introduced its Enterprise Hub strategy early last month. Additionally, SynOptics Communications, Inc., in conjunction with Cisco Systems, Inc. and SunConnect, a business unit of Sun Microsystems, Inc., jointly announced a plan in October to build next-generation hubs.

Other vendors, including Artel Communications Corp., Bytex Corp. and Chipcom Corp., have rolled out hubs featuring third-generation hub characteristics.

Third-generation hubs address the growing complexity and difficulty of installing and managing the LAN segments of enterprisewide nets, said Charlie Robbins, director of communications research at Aberdeen Group, Inc., a consulting firm in Boston.

As disparate LANs are linked and more mission-critical applications are deployed onto those nets, users are demanding wiring hubs that can simplify configuration, segmentation and management of those nets, he added.

High-speed backplanes

One way in which vendors are addressing these needs in third-generation products is by increasing the capacity and number of buses packed into each hub.

Hughes LAN Systems made an impressive entrance into the hub market with the recent introduction of its Enterprise Hub, a device that features two subbackplanes and consists of 11 buses with an aggregate capacity of 2G bit/sec.

One subbackplane consists of three Ethernet buses, an 800M bit/sec asynchronous fast packet bus and an administration bus. The other subbackplane includes three 4M and 16M bit/sec token-ring buses, two Fiber Distributed Data Interface buses and an 800M bit/sec synchronous fast packet bus.

Because they tend to break down more frequently than Ethernets, Hughes LAN Systems arranged for the FDDI and token-ring nets to share the same backplane so they could be replaced without disrupting the Ethernets, said Lauren Hipp, senior product line manager for Hughes LAN Systems' Enterprise Hub.

Hipp said backplane capacity is important because of changing user needs. "The actual throughput is very important because as your data requirements grow, you'll need to segment your traffic, and the aggregate of what you can actually support within the chassis will really determine how much traffic and how many users you can connect and still have good performance," she added.

Whereas early hubs supported only one type of LAN, third-generation versions can support multiple Ethernet, token-ring and FDDI nets. These hubs are particularly useful for tying departmental Ethernet and token-ring nets to an FDDI backbone.

Other vendors offering hubs supporting Ethernet, token ring and FDDI include Ungermann-Bass, with its Enterprise Hub line; Chipcom, with its ONline System Concentrators; and 3Com, which offers the LinkBuilder 3GH hub.

Integrated internetworking

Vendors of third-generation devices are also addressing user needs to integrate LAN environments that their products support by linking hub devices internally and developing integrated bridging and routing modules, said Bob Roman, product line manager for advanced systems at 3Com.

3Com's LinkBuilder 3GH, which begins shipping this month, will initially provide bridging between Ethernet and FDDI nets on the hub via communications between Ethernet interface modules and an FDDI backplane bus, Roman said.

3Com plans to integrate its new NETBuilder II bridge/router into the hub to support the passage of data from the Ethernet bus to the FDDI bus for even faster communications. "Seamless communications between different LAN media is absolutely an essential stepping-stone from a second-generation to a third-generation hub," he said.

Cisco, SunConnect and SynOptics are teaming up to develop the RubSystem, a third-generation hub that will comprise a Cisco routing bus woven in among Ethernet, token-ring and FDDI buses.

Third-generation hubs also need to offer high-level network management capabilities to handle the large amount of traffic streaming through.

Hughes LAN Systems will attempt to differentiate its Enterprise Hub by packaging each module with its own Simple Network Management Protocol agent, as opposed to using a single network management module, Hipp said.

New hubs godsend for complex LANs

The arrival of third-generation hubs is being hailed by users and industry analysts as one of the answers for supporting increasingly complex local-area networks.

Randy Cosby, network manager for Texas Children's Hospital in Houston, said he is currently looking at third-generation hubs to support medical imaging and video applications across the hospital's seven-building campus network.

"We have growing bandwidth needs, and a third-generation hub would enable us to utilize the fiber we have in place and further allow us to segment our networks for the various departmental applications," Cosby said. "A third-generation hub is like having many LANs in a box. It will provide us with the speed and throughput capabilities we're beginning to require and reduce bandwidth utilization on our current net."

Charlie Robbins, director of communications research at Aberdeen Group, Inc., a consulting firm in Boston, said it is important for users to look at hub vendors' two- to five-year plans.

"Users have to find out how to migrate from their existing hubs to third-generation hubs," Robbins said. "Will first-, second- and third-generation hubs be able to communicate?" Also, users must determine if the hubs are scalable or capable of being grown from small to larger sizes.

Bruce Russell, director of strategic services at Amex Life Assurance Co. in San Raphael, Calif., said he is looking to invest in third-generation hubs as a means to control his increasingly complex LAN environment.

"An enterprise network requires a superintelligent hub," Russell said. "Our aim is to centralize as much of the intelligence and functionality as possible in the wiring closet, and these next-generation hubs will provide us with that capability."

— *Bob Brown and Maureen Molloy*

McGee addresses APPN issues

continued from page 2

We want to take APPN, which is a full peer-to-peer routing protocol, and use it for getting LU 2 across the network. The way we're looking at doing that is to change some of the network products without having to change any of the users' applications. We'll use LU 6.2 as a pipe to transport [LU 2] control flows anywhere they need to go.

By taking that approach, we can change products such as VTAM and an OS/2 server, an [IBM] 3174 or an AS/400, and those changes will be independent of the applications on the client workstations.

Today, LU 2 sessions require centralized routing based on the Network Control Program (NCP) and VTAM. Will physical and logical units still be owned by a particular NCP/VTAM?

They'll still be owned by a particular VTAM or [System Services Control Point]. We'll take NCP out of the equation. Today, the NCP and the [physical unit] have to be adjacent to each other. In the future, we'll be able to split that apart by using LU 6.2 so you can have multiple intervening steps. It'll give [users] better configuration options in terms of where they can put their LU 2 workstations.

In that scenario, if a device is owned by Host A, does data from that device always have to go through Host A, even if its going to Host B?

No. Host A [may] just get the basic control flow communications going. But the actual LU 2 session and the data path can go anywhere in the net. The APPN directory will help set that up and choose the best path.

When will the capability be delivered for LU 6.2 to be used as a pipe for LU 2?

I would expect you'd see it in the second wave of APPN functions on the host. We know how to do it; it has to be coordinated across multiple products and development sites. Putting it in VTAM is good, but you've got to have it in the other guys, too.

You've said the first wave of APPN on the host is supposed to be announced and maybe ship in 1992. Does that mean the second wave would be in 1993?

Yes, that's about right.

IBM has pledged support for the Open Software Foundation, Inc.'s (OSF) Distributed Computing Environment (DCE), but there is some question as to whether the OSF's Remote Procedure Call (RPC) can be supported in APPN nets. Some say LU 6.2 is more or less analogous to an RPC, so you would use one or the other but not both.

APPN works from Layer 4 down. Today, it primarily routes LU 6.2.

We just talked about how it can route LU 2, and we think we can use APPN and enhanced APPN to route other protocols as we get into the high-speed environment. [Enhanced APPN, or APPN+, is a higher speed version of APPN that McGee will discuss next week.]

In the short run, the value of APPN is to move the installed SNA networks toward peer-to-peer and reduce administrative costs. [APPN] reduces the number of path statements by thousands that the customer has to define in networks just because APPN does things automatically.

We've got LU 6.2 on every platform now. We've got [the Common Programming Interface for Communications, a high-level application program interface to LU 6.2] on OS/2, AS/400, MVS and VM. We're going to put it on AIX and DOS. That's going to be a very good client/server application environment.

We think RPC is another viable, important application environment. There are some [independent software vendors] and customers that provide their own RPC-type of call mechanisms on top of LU 6.2.

We have done some work on mapping the DCE RPC environment over an APPN network. We technically know how to do that. We think it'll be important to have a good, robust RPC running over the APPN net, and we think DCE's the right way to do that.

You've talked about using APPN to handle multiprotocol local-area network traffic. How does that work?

In terms of shipped function IBM, APPN routes only LU 6.2. However, it coexists well with the other protocols. So a user on a LAN workstation can run APPN, TCP/IP, OSI, Novell, Inc.'s Internetwork Packet Exchange [IPX] or NETBIOS concurrently.

Beyond that is the ability to start using APPN to route additional things. We are doing some things to decouple applications from specific transport protocols.

For example, [the File Transfer Protocol] today only runs over TCP/IP. I've got a prototype of FTP running over LU 6.2/APPN.

Are there any management issues specific to APPN that you're addressing?

Yes. You'll see that next year, as well. Along with the basic product announcements, you'll see more APPN net management.

We're concentrating first on fault management with alerts, alarms and configuration management with graphical display of APPN topology. We're also looking at some sort of traffic accounting for APPN.

Firm to air int'l frame relay

continued from page 1

actually 1.920M bit/sec after overhead is subtracted from a 2.048 E-1 link.

CompuServe, Inc. and WilTel offer access at 56K/64K, 256K and 1.024M bit/sec. Sprint Data Group provides a full range of speeds up to T-1. BT North America, Inc. offers 56K/64K bit/sec access, and Graphnet, Inc. supports access from 64K to 256K bit/sec.

Cable & Wireless said one of its four U.K. nodes is located in London but declined to give the location of the other three U.K. nodes or the 17 European nodes. Each node will house at least one Data Packet Network (DPN)-100 switch. The carrier expects to be the first to offer service to Hong Kong ("Carriers in 3 countries to link domestic frame relay offerings," *NW,* June 10).

Rahe said Cable & Wireless will extend service to Japan in 1993. The carrier holds a major stake in Japan's International Digital Communications, Inc.

By comparison, BT North America offers frame relay to two European countries now and will add two more early next year, while Graphnet will offer service in London, Paris and Toronto next year. CompuServe will service London, Frankfurt, Germany, and Toronto next year, and Infonet plans to offer service to 11 countries in the second half of 1992.

AT&T, MCI Communications Corp. and Sprint Data Group have not detailed their plans to offer international frame relay service.

U.S. users will be able to access the Cable & Wireless service from 70 points of presence feeding into DPN switches in Atlanta, Chicago, Dallas, Los Angeles, New York, San Francisco and Washington, D.C., Rahe said. "We'll add nodes as demand grows."

Cable & Wireless will offer users three pricing options: a flat rate, a flat rate with a usage fee and a straight usage charge. The carrier has not set actual pricing.

The company is already testing frame relay internally with a three-node network used to carry data between network management centers in Hong Kong, London and Washington, D.C. Each site has a Northern Telecom DPN-100 packet switch equipped with a frame relay interface.

If all goes as planned, Cable & Wireless will soon begin beta-testing its frame relay service with a half dozen users that have sites in the U.S. and abroad. Although he declined to name the users, Rahe said, "[They] are interested in our service because of its international [reach]."

Like most frame relay service providers, Cable & Wireless will not limit users to the bandwidth they subscribe to under their committed information rate (CIR), Rahe said. Although the CIR guarantees a minimum bandwidth, the carrier will let users send bursts of data above that rate if bandwidth is available.

Cable & Wireless will enable users to integrate frame relay on a T-1 access line with its other network services, Rahe said. This will help small and midsize customers justify the service even if they cannot justify a separate T-1 pipe for frame relay.

Like AT&T, Cable & Wireless will provide a Simple Network Management Protocol-based performance monitoring tool for users. From an on-premises workstation, users will be able to monitor the service in real time, receive alarms and keep a history of performance.

Rahe said customers with mesh networks who need bandwidth less than five hours a day will likely move to frame relay, while users with star topology networks with five or more hours of use daily will probably stick with private lines.

IBM boosts LAN control

continued from page 1

ed Network Operations (ANO)/MVS Version 1.1, a host-based software product used to support other automation facilities.

In distributed environments, customers can implement LANAO/MVS on multiple hosts and configure them to forward alerts to a central NetView site, said Heather Kreger, an IBM staff programmer. Each host involved must also run NetView.

LANAO/MVS will automatically extract LAN topology data from LAN Manager or LAN Network Manager. Additionally, it will notify the operator of topology changes and provide both a current and previous topology view with the changes highlighted.

"The operators no longer have to keep track in their head or on a piece of paper of what their environment should look like," Kreger said.

Three levels of LAN monitoring are provided with LANAO/MVS. Active monitoring is used to continually check the health of vital LAN components, such as backbone LANs or network interfaces that support front-end processors. Passive monitoring is employed to monitor alerts as they flow into NetView and to act on those that require some response, Kreger said.

Recovery monitoring starts when a device goes down and continues until LANAO/MVS determines that the device has been brought back up, at which point, the operator is notified of the status change. "Currently, [LAN Manager] does not automatically send an alert when a problem is cleared," said Donleycott.

LANAO/MVS also provides a full-screen user interface with menus and fill-in-the-blank panels that let operators easily issue commands to remote LAN Managers. Among those commands are requests for lists of devices being managed by a particular LAN Manager or commands that link, unlink or test LAN bridge segments. Many commands can be issued by entering a two-character code while the cursor is positioned on the appropriate device, Kreger said.

LANAO/MVS will extract topology data from LAN Manager or LAN Network Manager.

▲▲▲

Additionally, LANAO/MVS can take advantage of the dynamic display facility (DDF) provided with ANO/MVS. DDF is a separate display screen that can be employed to show the operator all the network and systems elements that require operator attention, she said. It can be customized to show only LAN elements, all SNA alarms or any combination of the two.

From the DDF display, users can also enter commands to LAN Manager, although it requires knowledge of the correct command formats or preconfigured function keys in order to issue frequently used commands.

Analysts said the product is an improvement over existing facilities but will likely be employed only by users with predominantly IBM LAN equipment. This is because LAN Manager does not fully support non-IBM equipment, said Atul Kapoor, vice-president of Kaptronix, Inc., a consultancy in Haworth, N.J.

According to Kreger, LANAO/MVS will support any device with a token-ring adapter, but the amount of information provided about non-IBM devices would be limited.

David Passmore, a partner at the consultancy Ernst & Young in Vienna, Va., said the reliance on LAN Manager, which runs on OS/2, is another reason LANAO/MVS will appeal only to true IBM users.

"If they don't [already have OS/2 machines], that means somebody at the remote site has to get up the learning curve for OS/2," he said.

LANAO/MVS is available now. Its onetime charge is $7,000, and additional licenses cost $5,250. The product requires NetView Version 1.3 or later.

Users fight to hold spectrum

continued from page 2

outside of buildings. It has attracted a lot of attention because it is a complete network architecture that can stand independently of terrestrial networks. PCN supports Common Channel Signaling System 7 and, therefore, is viewed as an alternative network capable of providing all the services now offered by the Bell operating companies.

Microwave users last week told the FCC they feel they are being chased off their own nets.

Carl Bailey, manager of technical support for Chevron Information Technology Co., said moving the current 30,000 microwave stations in the U.S. to a new frequency would cause massive disruption and cost as much as $4 billion.

Such costs in a time of declining budgets could almost cripple many state and public safety agencies, according to Bailey and Capt. E.B. Wenke, commander of communications for the Los Angeles County Sheriff's Department. Wenke was representing state telecommunications directors and highway associations.

Earlier in the week, Sean Stokes, an attorney with the Utilities Telecommunications Council (UTC), which represents 2,000 electric, gas, water and steam utilities, expressed concern about the costs its members would incur if they are forced off current frequencies. Almost 250 of UTC's members operate microwave networks in the 2-GHz band.

"Too many basic questions have yet to be answered," Stokes said. "Perhaps the biggest one is, who will pay for any move?"

However, Barclay Jones, vice-president of engineering at American Personal Communications (APC), testified that PCN carriers would be willing to pick up the cost of displacing microwave users. APC has been testing PCN services.

In addition to Jones, several other experts at the meeting, including Craig Roos, president of LOCATE, an alternative access provider in New York, and John Major, senior vice-president and general manager of Motorola, Inc.'s Worldwide Systems Group, agreed that PCN carriers should pick up the cost of relocating microwave users to other frequencies.

The offer of financial assistance does not solve all of the microwave users' concerns, however. Bailey said microwave users are far more concerned about disruption of critical public safety systems. "We are not driven by economics; we're driven by reliability," he said.

Users said they would be equally concerned regardless of whether the FCC decides to move them to a different frequency or force them to share current frequencies with PCN users.

Wenke said that although some microwave users currently use higher frequencies, such as 6 GHz and 18 GHz, those bands are much less reliable. He added that his agency has some communications links in the 18-GHz band, which went down during a recent rain storm.

Wenke and Bailey said they are skeptical that the 2-GHz frequency can be shared with PCN users because the frequencies in major urban areas are saturated.

But a number of experts insisted that it is possible to engineer PCN to enable microwave users to coexist with PCN users.

APC's Jones said there is sufficient spectrum for both sets of users. He said his company recently conducted a study of the 11 largest cities in the U.S. and concluded there is at least 50 MHz of spectrum free in 96% of the areas of those cities. "At any given location, the majority of spectrum is not being used," Jones said.

Users ask for NREN support

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tem that would have to take into account more than just high-speed connections. Complex copyright issues over database information and a system for billing and accounting via multiple providers would have to be solved, as well.

"We're talking about extending the notion of clients and servers across a broad base," said Joel Birnbaum, HP's vice-president of R&D. Management of the network might also need to be decentralized and distributed, he added.

The industry leaders emphasized that they do not expect the government to build NREN.

"The private sector is perfectly capable of building the products," Sculley said. But the design of NREN and the issue of where the government decides to spend its $1 billion in seed money will influence industry's willingness to invest in the project, he added.

Other aspects of the initiative evoked concerns from CSPP members. The White House plan instructs the NSF to coordinate the integration of the Department of Energy's Energy Sciences Network into NREN and calls on the National Aeronautics and Space Administration and other agencies to perform network research.

But CSPP members expressed reservations about federal agency involvement in NREN as well as the government's ability to adequately manage activities between the agencies and the private sector. "We don't know exactly where that mechanism of cooperation will reside at this point," Sculley said.

Users lament DEC, Apple deal

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partnership have lacked innovation and provided little, if any, functionality beyond third-party wares.

"My feeling was that you'd see Apple and DEC coming up swiftly with products that would take over the third-party market," said John Farago, associate dean of academic affairs at New York Law School. "That's not what happened."

"It's taken years for them to produce something we had already," said Mark Jenkins, lead analyst with Gannett Company, Inc.'s information center in Arlington, Va. "We were hoping for new things people didn't think about doing, new products and a joining of the product lines. We never saw that."

One user downplayed reports of the expanded resale agreement between DEC and Apple, saying the firms ought to focus more on product development.

"More people are interested in interoperability than in who's in the dealer channel this week," quipped Marc Kustoff, director of information systems at pharmaceutical giant Rhone-Poulenc Rorer, Inc. in Collegeville, Pa.

The partnership

In January 1988, DEC and Apple announced a development agreement aimed at integrating Macintoshes and AppleTalk nets into the DECnet world. In May 1990, the companies unwrapped their first products: LANWorks for Macintosh — later renamed Pathworks for Macintosh — and SQL/Services for Macintosh.

DEC officials claim that the relationship with Apple is still active and customers will soon see evidence of that in a new version of Pathworks for Macintosh.

"The Apple relationship is still very good and strong," said John Rose, vice-president of DEC's Personal Computing Systems Group. "We're still doing development together. We're still continuing our evolution in a positive fashion."

Apple concurs. The alliance is "certainly still active from a technical, sales and marketing standpoint," said Greg Memo, DEC-Apple alliance product manager for Apple. He said DEC and Apple are investigating product development opportunities beyond Pathworks.

But analysts say the relationship started deteriorating shortly after it was announced. DEC and Apple's perspectives on product development and marketing never meshed, and the two never really got clear on how they could benefit from the alliance.

"They had a difficult time working together," said Nick Lippis, a principal with Strategic Networks Consulting, Inc. in Rockland, Mass. "Apple has a six-month product cycle, while DEC's development cycle is 18 to 24 months. They have a different sense of urgency, priority and time to market."

Added Howard Niden, senior manager at Price Waterhouse, "They didn't pinpoint synergies and determine why they were important."

Not bearing much fruit

Users agreed. "I think DEC has made some well-chosen, fruitful strategic alliances," Rhone-Poulenc's Kustoff said. "I can't say Apple is one of [them]. Not a whole lot has come of it."

In the meantime, DEC and Apple have each formed alliances with the other's staunchest rival — DEC with Microsoft Corp. and Apple with IBM. DEC and Microsoft are founding members of the Advanced Computing Environment (ACE) consortium and are working to integrate Windows applications into DEC nets.

Apple and IBM are jointly licensing and developing Reduced Instruction Set Computer, object-oriented and operating system technologies in an activity that is viewed as competitive response to ACE and the growing dominance of Microsoft.

The new relationships are a higher priority to DEC and Apple than their own joint activity, analysts and users say. They maintain, however, that the DEC-Apple arrangement started unraveling earlier.

"The obstacles were there before" IBM aligned with Apple and DEC with Microsoft, said analyst Kevin O'Neill of Business Research Group in Newton, Mass. "But this may put further strain on the relationship."

One of those obstacles, ironically, was the lack of a resale agreement between DEC and Apple, O'Neill said.

That obstacle is expected to be overcome soon when the companies announce an expanded resale agreement, whereby DEC will resell Macintosh personal computers worldwide. Analysts say DEC will resell Macintoshes and related hardware — EtherTalk, LocalTalk and TokenTalk interface cards and laser printers — in the U.S. and abroad.

A DEC spokesman last week confirmed that the companies will disclose an expanded sales and marketing relationship early next year but declined to offer any details.

Last month, DEC and Apple said DEC would resell Macintoshes in Europe. Last week, DEC said it will sell and support Microsoft's 32-bit Windows NT server operating system, which is expected to be released in late 1992.

Analysts praised the expanded DEC-Apple resale deal. "This is an important arrangement," said Jack Karp, an analyst with the META Group in Westport, Conn. "It's more important given what little has come of the DEC-Apple arrangement."

"This gives DEC's sales force something people want to buy even if [DEC doesn't] make it," said Stuart Woodring of Forrester Research, Inc. in Cambridge, Mass.

But users weren't impressed. "We expected that a long time ago," Gannett's Jenkins said. "This doesn't excite us at all. It's not giving us anything we need."

HP, Novell team on new NetWare

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tive NetWare features as NetWare Loadable Modules. It also wants to synchronize software updates between the two NetWare versions.

"Novell wants to take Portable NetWare and native NetWare and make it one product," said Bernard Guidon, general manager of HP's General Systems Division. "We will be helping them to make sure that happens."

Analysts agreed that Novell needs to unite the two versions. They said new versions for Portable NetWare lagged as much as a year behind native NetWare, which has made the product less viable in the market.

"I'm sure HP is pressing them on this issue," said George Colony, president of Forrester Research, Inc. "Novell needs companies like HP to make some important inroads into Unix."

Although HP is a strong supporter of open systems and the Open Software Foundation, Inc.'s Distributed Computing Environment (DCE), the vendor sees a role for NetWare in its strategy. HP will see DCE as the technology for creating distributed computing environments across an enterprise, while NetWare and Microsoft Corp.'s LAN Manager will be offered to users building departmental LANs.

NTIA calls for accountability

continued from page 6

should be required to compensate users for outages.

"Carriers should face clear and certain ecomonic consequences when major outages occur — either from the swift, sharp sword of competition or, where competition has not yet emerged, from a compensation schedule that is spelled out in advance and enforced, if necessary by regulators," Obuchowski said.

Setting parameters

FCC Chairman Alfred Sikes said last week that staffers are studying Obuchowski's proposal. But it is unclear how eager the FCC would be to adopt it since agency officials have said they do not think the FCC should get involved in setting network performance standards.

The FCC is currently proposing that outages of 30 minutes or more that affect 50,000 customers must be reported within 90 minutes. The Tele-Communications Association, Inc. (TCA) conducted an analysis of outages during the second quarter of this year and found there were 331 service disruptions affecting 3.5 million lines for an average of 45 minutes. Under the FCC's proposed rules, only one of these outages would have had to have been reported.

The TCA proposed that the FCC require carriers to report outages affecting at least 5,000 lines for more than 20 minutes or affecting at least 1,000 lines for 10 minutes within 24 hours.

DEC backs Windows NT OS

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The three servers — DECsystem 5000/25 and 5000/240, and DECsystem 5900 — run DEC's Ultrix operating system and will support Windows NT when it becomes available.

The DECsystem 5000/25 and 5000/240 are configured as desktop units, while the 5900 is intended for database applications requiring up to 35 gigabytes of storage.

All servers include one Ethernet adapter as a standard feature. The 5000/25 has two expansion slots to house either additional Ethernet or single-attach Fiber Distributed Data Interface controllers. The 5000/240 and the 5900 have three expansions slots for the additional controllers.

DEC also unwrapped two Network Applications Support (NAS) software packages for RISC/Ultrix platforms. NAS 200 for RISC/Ultrix lets IBM Personal Computers, Apple Computer, Inc. Macintoshes and Ultrix workstations share data.

NAS 300 for RISC/Ultrix enables users to distribute client/server applications across multivendor desktop and server systems, DEC said.

DECsystem 5000/25 starts at $4,995 and will be available in January. DECsystem 5000/240 pricing starts at $13,495 for 16M bytes of main memory. A 32M-byte system starts at $17,105 and is available now.

Pricing for DECsystem 5900 starts at $59,050; it is available now. NAS 200 for RISC/Ultrix is priced from $2,720 to $4,730 and will be available next month. Pricing for NAS 300 for RISC/Ultrix ranges from $4,610 to $7,480 and will also be available in January.

Products build on client/server

continued from page 4

The Open Communications Network establishes communications with the target machine using Software AG's proprietary Function Server Protocol.

Last week, Software AG announced Entire APPC Server, software that enables the Open Communications Network to use IBM's LU 6.2 to communicate with DBMSs on any platform.

End-user applications

The company also announced six Windows-based applications scheduled for availability in the next year that are designed to help users access data across a net and manipulate it locally.

They include: Entire Office Workstation, which is a graphical user interface for database access, electronic mail and calendar management; Entire Reporting Client, which lets users pull information from databases into Windows applications; Entire Business Analysis Workstation, which is used for analyzing and manipulating data from various databases; and Entire Information Retrieval Client, which is employed to integrate multimedia data, such as graphics and images, into textual documents.

NETWORK WORLD

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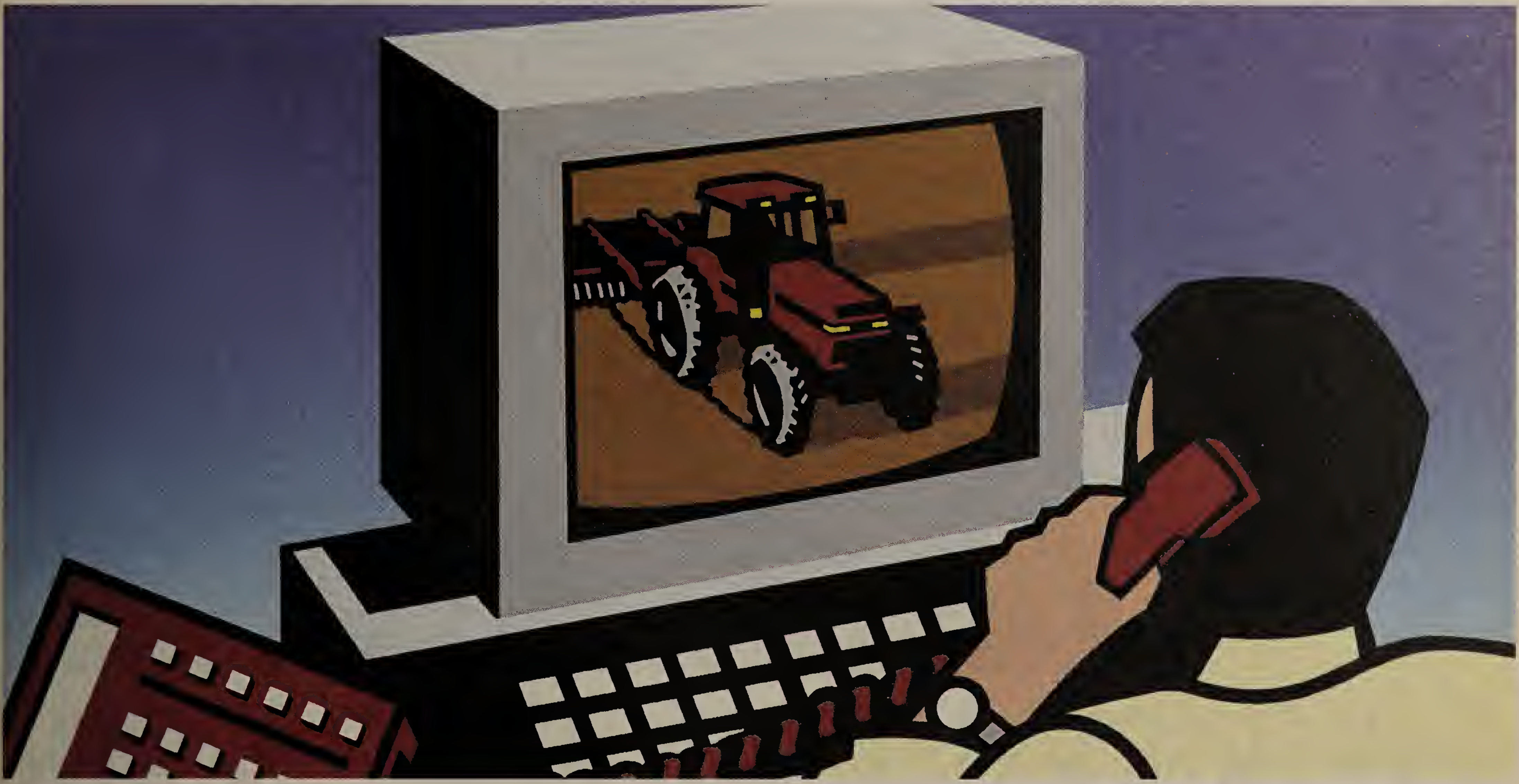

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Configuration, monitoring and upgrades from anywhere on network	■	■
SNMP and atalkad support	■	■
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